Access DB# 174571

SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: Sin J. Lee Examiner #: 7606 Date: 12/15/05
Art Unit: 1752 Phone Number 30 2-1333 Serial Number: 10/765,919
Mail Box and Bldg/Room Location: 9060 (Rem.) Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

****

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Plz. Acc B76

Inventors (please provide full names):

Earliest Priority Filing Date:

***For Sequence Searches Only** Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.*

Plz. search for a polymer which contains a repeat unit that includes a substituent gp. of the formula (3) in Cl. #3

****

STAFF USE ONLY	Type of Search		Vendors and cost where applicable	
Searcher: WLa	NA Sequence (#)		STN	$ 3000.14
Searcher Phone #:	AA Sequence (#)		Dialog	
Searcher Location:	Structure (#)	1	Questel/Orbit	
Date Searcher Picked Up: 12/22/05	Bibliographic		Dr.Link	
Date Completed: 12/22/05	Litigation		Lexis/Nexis	
Searcher Prep & Review Time: 30	Fulltext		Sequence Systems	
Clerical Prep Time: 30	Patent Family		WWW/Internet	
Online Time: 50	Other		Other (specify)	

PTO-1590 (8-01)

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United States Patent and Trademark Office
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P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

Bib Data Sheet

CONFIRMATION NO. 4118

SERIAL NUMBER	FILING DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
10/765,919	01/29/2004 RULE	430	1752	0171-1058P

APPLICANTS

Jun Hatakeyama, Niigata-ken, JAPAN;

Takanobu Takeda, Niigata-ken, JAPAN;
Osamu Watanabe, Niigata-ken, JAPAN;

** CONTINUING DATA **********
None SJL

** FOREIGN APPLICATIONS **********
JAPAN 2003-021416 01/30/2003) SJL
JAPAN 2003-194033 07/09/2003)

IF REQUIRED, FOREIGN FILING LICENSE GRANTED
** 08/18/2005

Foreign Priority claimed	35 USC 119 (a-d) conditions met	Verified and Acknowledged	STATE OR COUNTRY	SHEETS DRAWING	TOTAL CLAIMS	INDEPENDENT CLAIMS
☑ yes ☐ no	☑ yes ☐ no ☐ Met after Allowance	Examiner's Signature SJL Initials	JAPAN	2	13	4

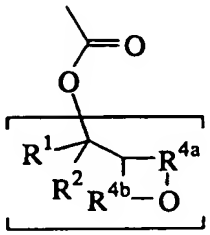
ADDRESS
02292
BIRCH STEWART KOLASCH & BIRCH
PO BOX 747
FALLS CHURCH , VA
22040-0747

TITLE
Polymer, resist composition and patterning process

FILING FEE RECEIVED	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time)

carbon atoms, or R^1 and R^2 taken together may form an aliphatic hydrocarbon ring with the carbon atom to which they are attached.

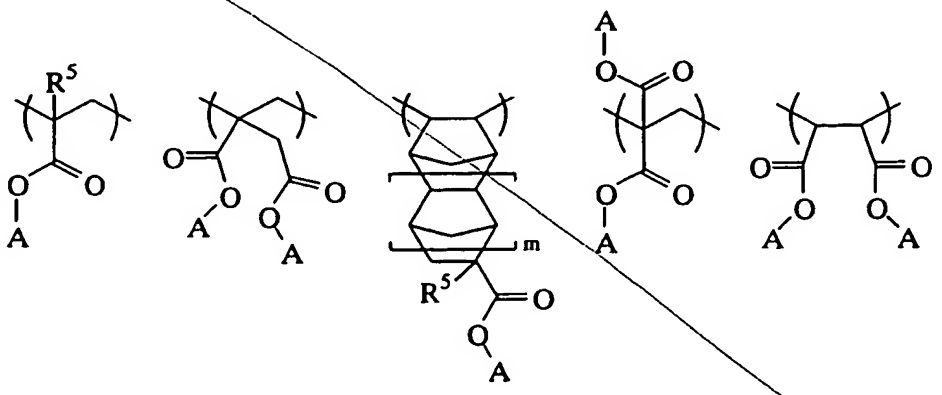
3. A polymer comprising recurring units containing silicon and recurring units having a substituent group of the general formula (3):



(3)

wherein R^1 and R^2 are independently selected from straight, branched or cyclic monovalent hydrocarbon groups of 1 to 10 carbon atoms, or R^1 and R^2 taken together may form an aliphatic hydrocarbon ring with the carbon atom to which they are attached, and R^{4a} and R^{4b} each are a single bond or an alkylene or alkenylene group of 1 to 4 carbon atoms, the total number of carbon atoms in R^{4a} and R^{4b} being from 3 to 6.

4. A polymer comprising recurring units containing silicon and recurring units of at least one type selected from the general formulae (4) to (8):



(4) (5) (6) (7) (8)

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=> d his

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                 SEL RN

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L4               STR

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L6             0 S L3 AND L4 AND L5
L7             0 S L3 AND L4
L8               SCR 1146 OR 1135
L9             2 S L3 AND L8
L10              STR L3
L11            0 S L10 AND L4
L12            2 S L10 AND L8
L13            2 S L10 AND L5 AND L8
L14          110 S L10 AND L5 AND L8 FUL
                 SAV L14 LEE919/A
L15            7 S L14 AND L2
L16           30 S L14 AND 103.61.1/RID
L17           13 S L14 AND 16.138.6/RID
L18           40 S L14 AND 16.138/RID
L19              STR L10
L20            1 S L19 AND L5 AND L8
L21          157 S L19 AND L5 AND L8 FUL
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L22          167 S L14 OR L21
L23           33 S L22 AND 103.61/RID
L24           45 S L22 AND 16.138/RID

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L28           34 S L26 OR L27
L29           97 S L25 NOT L28

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     FILE 'HCAPLUS' ENTERED AT 10:43:23 ON 22 DEC 2005
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L32           32 S L31 NOT L28
L33           34 S L31 AND PHOTOG?/SC
L34            1 S L33 NOT L28


=> d que 132
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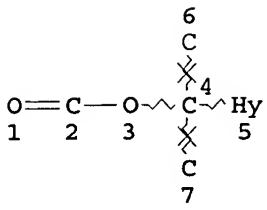
L8 SCR 1146 OR 1135
L10 STR



NODE ATTRIBUTES:
NSPEC IS RC AT 4
NSPEC IS RC AT 6
NSPEC IS RC AT 7
DEFAULT MLEVEL IS ATOM
GGCAT IS SAT AT 5
DEFAULT ECLEVEL IS LIMITED
ECOUNT IS X6 C AT 5

GRAPH ATTRIBUTES:
RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS 7

STEREO ATTRIBUTES: NONE
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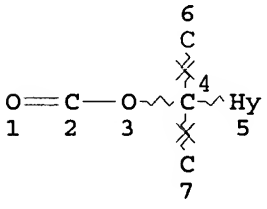
L19 STR



NODE ATTRIBUTES:
NSPEC IS RC AT 4
NSPEC IS RC AT 6
NSPEC IS RC AT 7
DEFAULT MLEVEL IS ATOM
DEFAULT ECLEVEL IS LIMITED
ECOUNT IS X6 C X1 O AT 5

GRAPH ATTRIBUTES:
RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS 7

STEREO ATTRIBUTES: NONE
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L30 110 SEA FILE=REGISTRY ABB=ON PLU=ON L22 NOT 1-20/N
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L32 32 SEA FILE=HCAPLUS ABB=ON PLU=ON L31 NOT L28

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FILE 'HCAPLUS' ENTERED AT 11:04:19 ON 22 DEC 2005

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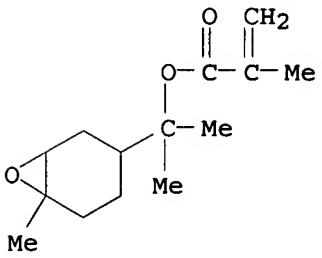
L32 ANSWER 1 OF 32 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2005:548864 HCAPLUS
DOCUMENT NUMBER: 143:212270
TITLE: Photocrosslinking and thermal degradation of epoxy-containing polymers using photobase generators
AUTHOR(S): Ohba, Tadahiro; Nakai, Daisuke; Suyama, Kanji; Shirai, Masamitsu
CORPORATE SOURCE: Department of Applied Chemistry, Osaka Prefecture University, Osaka, 599-8531, Japan
SOURCE: Chemistry Letters (2005), 34(6), 818-819
CODEN: CMLTAG; ISSN: 0366-7022
PUBLISHER: Chemical Society of Japan
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A new system consisting of a photobase generator and an oligomer bearing both epoxy and tertiary ester units was prepared as a photocrosslinkable and thermally de-crosslinkable polymer system. The sample film became insol. on UV-irradiation and followed by baking at 100°-160°. The crosslinked film became soluble in methanol when baked at 180°-200°.
IT **354801-91-5**
(photocrosslinking and thermal degradation of epoxy-containing polymethacrylate using photobase generators)
RN 354801-91-5 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 354801-90-4
CMF C14 H22 O3



CC 35-8 (Chemistry of Synthetic High Polymers)
IT **354801-91-5**
(photocrosslinking and thermal degradation of epoxy-containing polymethacrylate using photobase generators)
REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

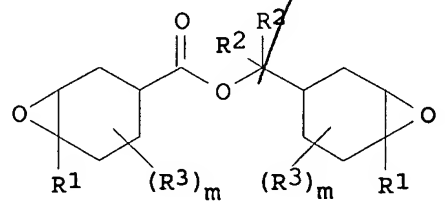
=> d l32 2-32 ibib abs hitstr hitind

L32 ANSWER 2 OF 32 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2005:368209 HCAPLUS
DOCUMENT NUMBER: 142:431682
TITLE: Radiation-curable jet-printing inks having good discharge and storage stability and printed matter therewith
INVENTOR(S): Sasa, Nobumasa
PATENT ASSIGNEE(S): Konica Minolta Medical & Graphic, Inc., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 20 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005112936	A2	20050428	JP 2003-346682	2003 1006

PRIORITY APPLN. INFO.: JP 2003-346682 2003 1006

OTHER SOURCE(S): MARPAT 142:431682
GI



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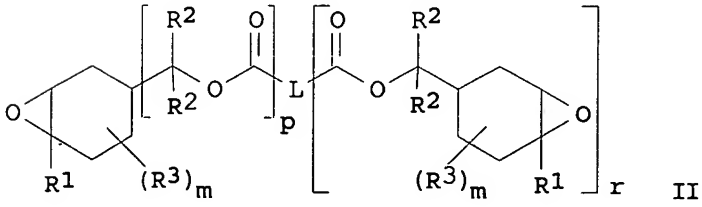

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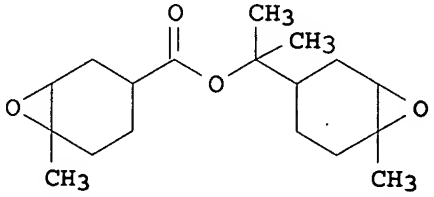

III

AB The inks contain alicyclic epoxide I and/or II [R1-R3 = substituent; m = 0-2; p = 0, 1; r = 1-3; L = C1-15 (r + 1)-valent linking group (containing S or O in the main chain) or single bond]. The inks may contain photocationic polymerization initiators, pigments, pigment dispersants, and satisfy viscosity (25°) 5-50 mPa-s. Thus, an ink containing epoxide III 30, OXT 221 (oxetane compound) 70, triethylene glycol divinyl ether 10, Solsperse 32000 (dispersant) 3, and Adeka Optomer SP 152 (triphenylsulfonium salt) 10, and Cu phthalocyanine 5 parts showed no viscosity increase on 1-mo storage at 100°. no precipitation on 1-mo storage at 25°, and having no or less irritating action on skins.

IT **850421-69-1P 850421-71-5P 850421-73-7P 850421-75-9P 850421-77-1P 850427-47-3P**
(alicyclic epoxide-containing photocurable jet inks having good discharge and storage stability)

RN 850421-69-1 HCAPLUS

CN 7-Oxabicyclo[4.1.0]heptane-3-carboxylic acid, 6-methyl-, 1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl ester, polymer with 3,3'-[oxybis(methylene)]bis[3-ethyloxetane] and 3,6,9,12-tetraoxatetradeca-1,13-diene (9CI) (CA INDEX NAME)

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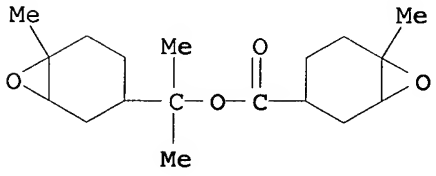
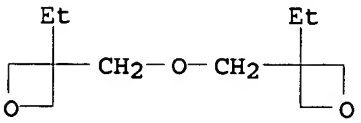
CRN 850421-68-0
CMF C18 H28 O4



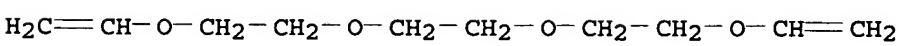
CM 2

CRN 18934-00-4
CMF C12 H22 O3



CM 3

CRN 765-12-8
CMF C10 H18 O4

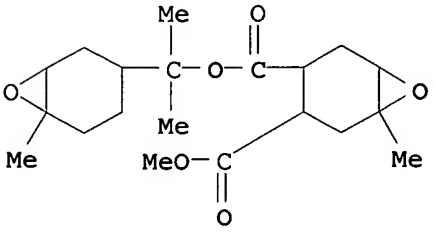


RN 850421-71-5 HCAPLUS

CN 7-Oxabicyclo[4.1.0]heptane-3,4-dicarboxylic acid, 1-methyl-, 3-methyl 4-[1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl] ester, polymer with 3,3'-[oxybis(methylene)]bis[3-ethyloxetane] (9CI) (CA INDEX NAME)

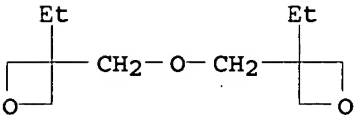
CM 1

CRN 850421-70-4
CMF C20 H30 O6



CM 2

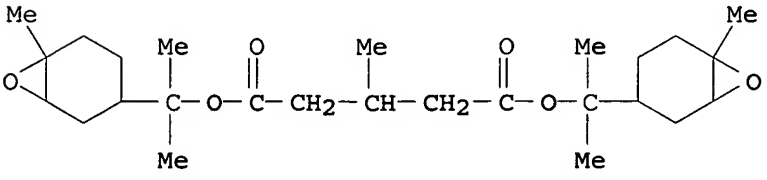
CRN 18934-00-4
CMF C12 H22 O3



RN 850421-73-7 HCAPLUS
CN Pentanedioic acid, 3-methyl-, bis[1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl] ester, polymer with 3,3'-[oxybis(methylene)]bis[3-ethyloxetane] (9CI) (CA INDEX NAME)

CM 1

CRN 850421-72-6
CMF C26 H42 O6



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CRN 18934-00-4
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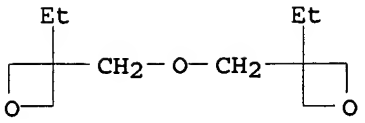

RN 850421-75-9 HCAPLUS
CN Pentanedioic acid, 3-methyl-3-[2-[1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethoxy]-2-oxoethyl]-, bis[1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl] ester, polymer with 3,3'-[oxybis(methylene)]bis[3-ethyloxetane] and 3,6,9,12-tetraoxatetradeca-1,13-diene (9CI) (CA INDEX NAME)

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CRN 850421-74-8
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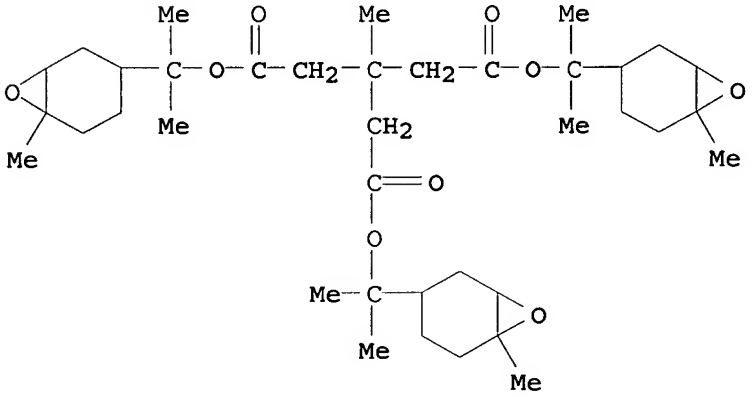

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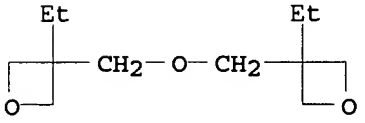

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CRN 765-12-8
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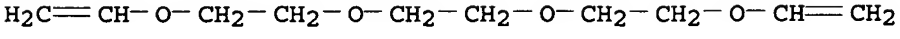

RN 850421-77-1 HCAPLUS
CN Pentanedioic acid, 3,3-bis[2-[1-methyl-1-(6-methyl-7-

oxabicyclo[4.1.0]hept-3-yl)ethoxy]-2-oxoethyl]-,
bis[1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl]
ester, polymer with 3-ethenyl-7-oxabicyclo[4.1.0]heptane,
3,3'-[oxybis(methylene)]bis[3-ethyloxetane] and
3,6,9,12-tetraoxatetradeca-1,13-diene (9CI) (CA INDEX NAME)

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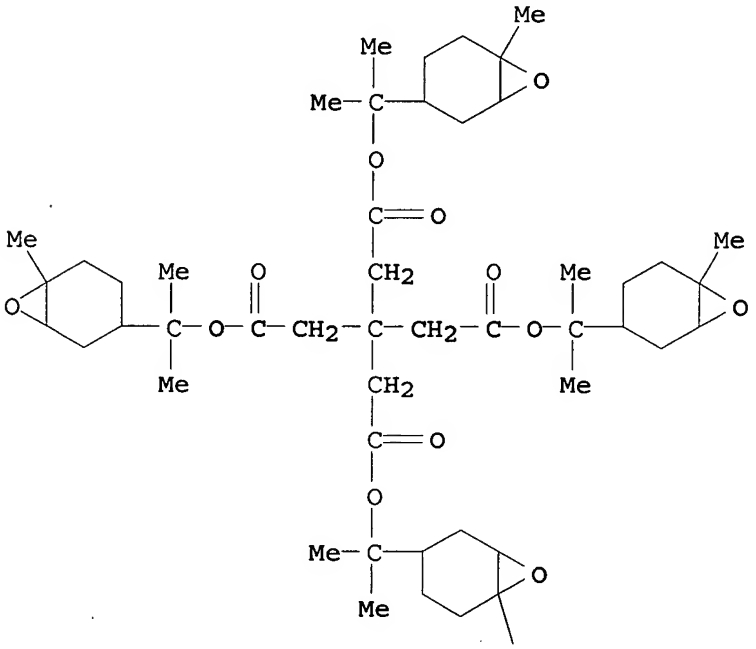
CRN 850421-76-0
CMF C49 H76 O12

PAGE 1-A



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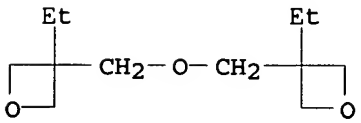

CM 3

CRN 765-12-8
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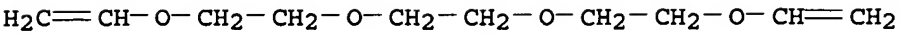

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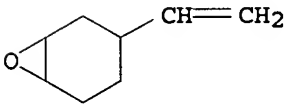

RN 850427-47-3 HCAPLUS
CN Butanedioic acid, bis[1-methyl-1-(methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl] ester, polymer with 3,3'-[oxybis(methylene)]bis[3-ethyloxetane] (9CI) (CA INDEX NAME)

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CRN 850427-46-2
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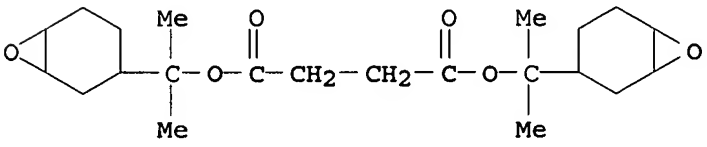
CCI IDS



2 (D1—Me)

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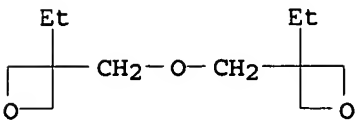


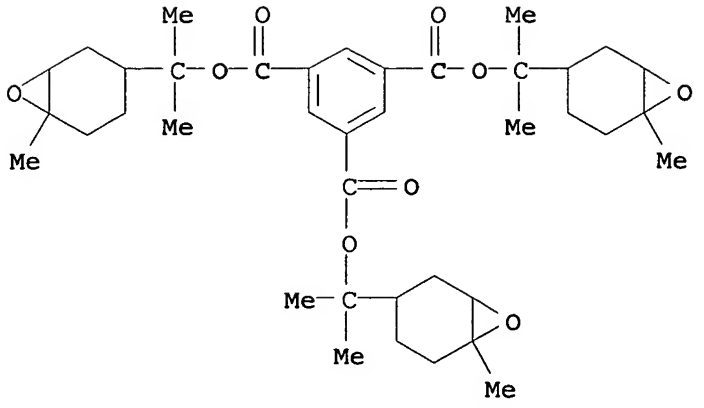
IC ICM C09D011-00

ICS B41J002-01; B41M005-00
CC 42-12 (Coatings, Inks, and Related Products)
Section cross-reference(s): 74
IT **850421-69-1P 850421-71-5P 850421-73-7P**
850421-75-9P 850421-77-1P 850427-47-3P
(alicyclic epoxide-containing photocurable jet inks having good discharge and storage stability)

L32 ANSWER 3 OF 32 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2004:603452 HCAPLUS
DOCUMENT NUMBER: 141:261432
TITLE: Photocrosslinking system using multifunctional epoxy crosslinkers having thermally degradable properties
AUTHOR(S): Okamura, Haruyuki; Shin, Kazuo; Tsunooka, Masahiro; Shirai, Masamitsu
CORPORATE SOURCE: Department of Applied Chemistry, Graduate School of Engineering, Osaka Prefecture University, Osaka, 599-8531, Japan
SOURCE: Journal of Polymer Science, Part A: Polymer Chemistry (2004), 42(15), 3685-3696
CODEN: JPACEC; ISSN: 0887-624X
PUBLISHER: John Wiley & Sons, Inc.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A novel thermally degradable photocrosslinking system was investigated. Difunctional and trifunctional epoxides with tertiary ester linkages were synthesized. When blended films of epoxides and poly(vinyl phenol) or epoxides and poly(methacrylic acid-co-Et methacrylate) with a photoacid generator were irradiated and then baked at relatively low temps. (<100 °C), the films became insol. in solvents. The heating conditions strongly affected the insol. fractions of the blends. The insol. fractions of the blended films containing the trifunctional epoxide were higher than the fractions of the films containing the difunctional epoxide. The crosslinked films became soluble after baking at relatively high temps. (>120 °C). The reaction pathway of the blended system was studied with in situ Fourier transform IR measurements.
IT **756819-40-6P 756819-41-7P 756819-43-9P**
756819-44-0P
(photocrosslinking system using multifunctional epoxy crosslinkers having thermally degradable properties)
RN 756819-40-6 HCAPLUS
CN 1,3,5-Benzenetricarboxylic acid, tris[1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl] ester, polymer with ethyl 2-methyl-2-propenoate and 2-methyl-2-propenoic acid (9CI) (CA INDEX NAME)

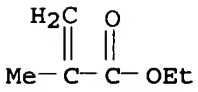
CM 1

CRN 756819-39-3
CMF C39 H54 O9



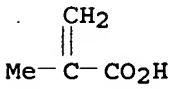
CM 2

CRN 97-63-2
CMF C6 H10 O2



CM 3

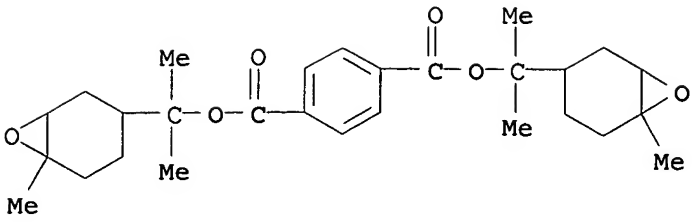
CRN 79-41-4
CMF C4 H6 O2



RN 756819-41-7 HCAPLUS
CN 1,4-Benzenedicarboxylic acid, bis[1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl] ester, polymer with ethyl 2-methyl-2-propenoate and 2-methyl-2-propenoic acid (9CI) (CA INDEX NAME)

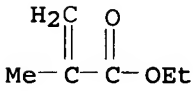
CM 1

CRN 444143-79-7
CMF C28 H38 O6



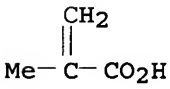
CM 2

CRN 97-63-2
CMF C6 H10 O2



CM 3

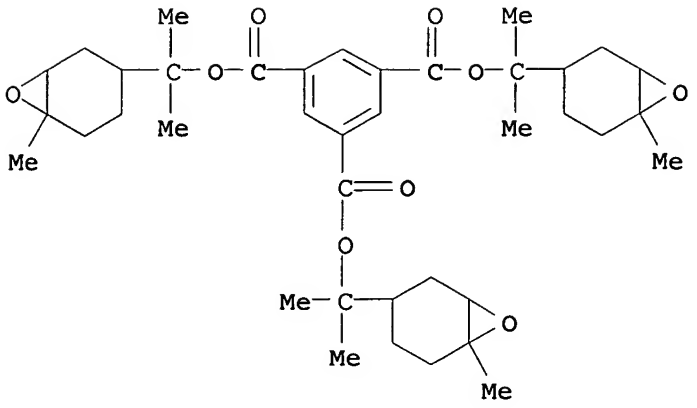
CRN 79-41-4
CMF C4 H6 O2



RN 756819-43-9 HCAPLUS
CN 1,3,5-Benzenetricarboxylic acid, tris[1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl] ester, polymer with 4-ethenylphenol (9CI) (CA INDEX NAME)

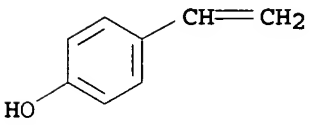
CM 1

CRN 756819-39-3
CMF C39 H54 O9



CM 2

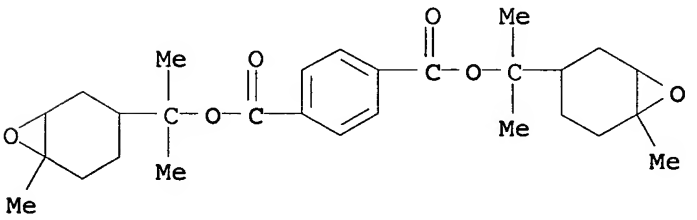
CRN 2628-17-3
CMF C8 H8 O



RN 756819-44-0 HCAPLUS
CN 1,4-Benzenedicarboxylic acid, bis[1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl] ester, polymer with 4-ethenylphenol (9CI) (CA INDEX NAME)

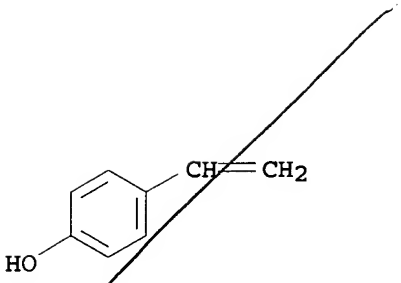
CM 1

CRN 444143-79-7
CMF C28 H38 O6



CM 2

CRN 2628-17-3
CMF C8 H8 O

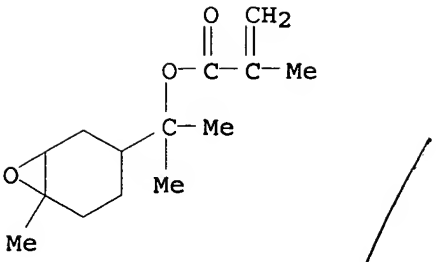


CC 37-6 (Plastics Manufacture and Processing)
IT **756819-40-6P 756819-41-7P 756819-43-9P**
756819-44-0P
(photocrosslinking system using multifunctional epoxy crosslinkers having thermally degradable properties)
REFERENCE COUNT: 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 4 OF 32 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2004:454829 HCAPLUS
DOCUMENT NUMBER: 141:261168
TITLE: Thermal degradation of photo crosslinked polymers
AUTHOR(S): Shirai, Masamitsu; Morishita, Satoshi; Kawaue, Akiya; Okamura, Haruyuki; Tsunooka, Masahiro
CORPORATE SOURCE: Department of Applied Chemistry, Graduate School of Engineering, Osaka Prefecture University, Osaka, 599-8531, Japan
SOURCE: ACS Symposium Series (2004), 874(Polymers for Microelectronics and Nanoelectronics), 236-250
CODEN: ACSMC8; ISSN: 0097-6156
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A novel monomer having both epoxy and thermally cleaveable tertiary ester moieties was synthesized and characterized. Homopolymer and copolymers with tert-Bu methacrylate, tert-butoxy styrene or styrene sulfonates were synthesized. On UV irradiation the polymer films containing photo acid generators became insol. in organic solvents. When the crosslinked polymer films were baked at 100-220 °C, they became soluble in methanol. The effective baking temperature was strongly dependent on polymer structure. The crosslinked polymers having styrenesulfonic acid ester units became soluble in water after bake treatments.
IT **354801-91-5P 401928-96-9P 401928-97-0P**
460085-60-3P 460085-61-4P 460085-62-5P
(thermal degradation of photo crosslinked polymers)
RN 354801-91-5 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

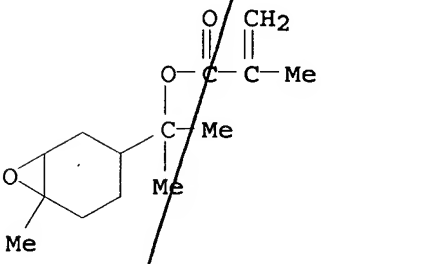
CRN 354801-90-4
CMF C14 H22 O3



RN 401928-96-9 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 1,1-dimethylethyl ester, polymer with 1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

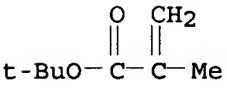
CM 1

CRN 354801-90-4
CMF C14 H22 O3



CM 2

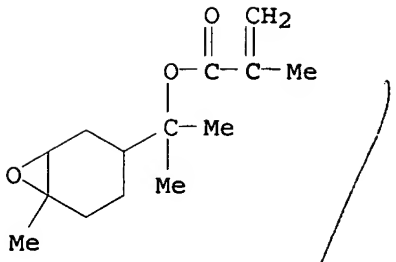
CRN 585-07-9
CMF C8 H14 O2



RN 401928-97-0 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl ester, polymer with 1-(1,1-dimethylethoxy)-4-ethenylbenzene (9CI) (CA INDEX NAME)

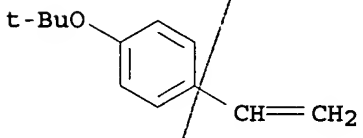
CM 1

CRN 354801-90-4
CMF C14 H22 O3



CM 2

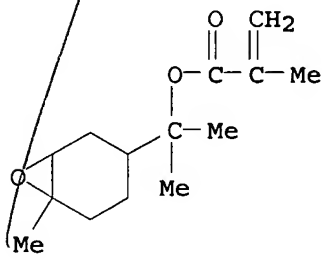
CRN 95418-58-9
CMF C12 H16 O



RN 460085-60-3 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl ester, polymer with cyclohexyl 4-ethenylbenzenesulfonate (9CI) (CA INDEX NAME)

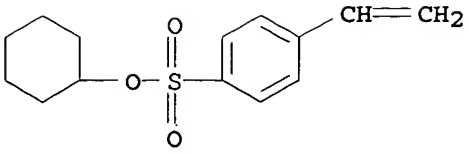
CM 1

CRN 354801-90-4
CMF C14 H22 O3



CM 2

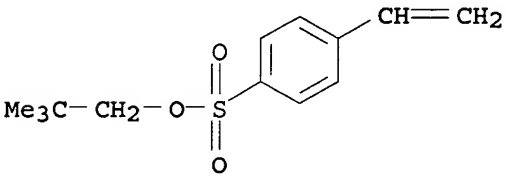
CRN 211308-93-9
CMF C14 H18 O3 S



RN 460085-61-4 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl ester, polymer with 2,2-dimethylpropyl 4-ethenylbenzenesulfonate (9CI) (CA INDEX NAME)

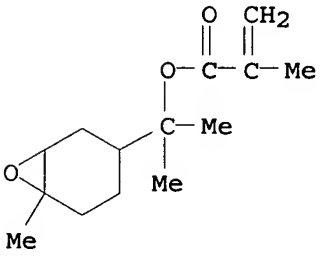
CM 1

CRN 443899-80-7
CMF C13 H18 O3 S



CM 2

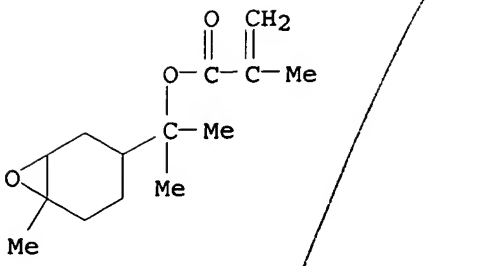
CRN 354801-90-4
CMF C14 H22 O3



RN 460085-62-5 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl ester, polymer with phenyl 4-ethenylbenzenesulfonate (9CI) (CA INDEX NAME)

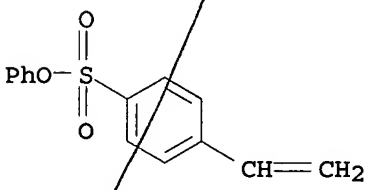
CM 1

CRN 354801-90-4
CMF C14 H22 O3



CM 2

CRN 20996-57-0
CMF C14 H12 O3 S



CC 35-8 (Chemistry of Synthetic High Polymers)
IT **354801-91-5P 401928-96-9P 401928-97-0P**
460085-60-3P 460085-61-4P 460085-62-5P
(thermal degradation of photo crosslinked polymers)
REFERENCE COUNT: 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 5 OF 32 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2004:138024 HCAPLUS
DOCUMENT NUMBER: 140:375920
TITLE: Controlled degradation of epoxy networks: analysis of crosslink density and glass transition temperature changes in thermally reworkable thermosets
AUTHOR(S): Chen, Jir-Shyr; Ober, Christopher K.; Poliks, Mark D.; Zhang, Yuanming; Wiesner, Ulrich; Cohen, Claude
CORPORATE SOURCE: Department of Materials Science and Engineering, Cornell University, Ithaca, NY, 14853, USA
SOURCE: Polymer (2004), 45(6), 1939-1950
CODEN: POLMAG; ISSN: 0032-3861
PUBLISHER: Elsevier Science Ltd.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The characteristics of networks formed in cured reworkable' epoxy thermosets capable of controlled thermal degradation were studied. Dynamic mech. thermal anal., swelling measurements, and glass transition temperature measurements were used to obtain information regarding the time and temperature dependence of the crosslink densities of these materials. By applying isothermal conditions, networks

containing up to 36 mol% non-degradable components could be completely degraded, i.e. progress from a network of infinite mol. weight to a finite one with zero crosslink d. Percolation theory was used to facilitate the interpretation of these results. The degradation behavior of the reworkable thermosets were well-described by gel degradation theory, i.e. the reverse of the gelation process, and the exptl. results were in good agreement with calculated values obtained by replacing the extent of reaction, p, in Macosko and Miller's branching theory with the extent of degradation, 1-p.

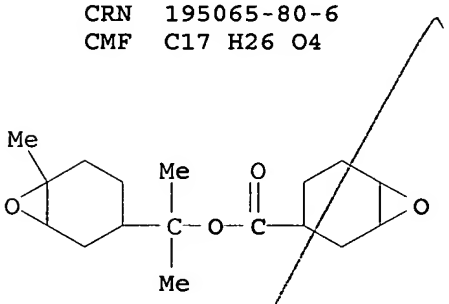
IT **195065-81-7**, Hexahydro-4-methylphthalic anhydride-α-Terp copolymer **683225-11-8**
(anal. of crosslink d. and glass transition temperature changes in thermally reworkable epoxy thermosets during thermal degradation)

RN 195065-81-7 HCAPLUS

CN 7-Oxabicyclo[4.1.0]heptane-3-carboxylic acid, 1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl ester, polymer with hexahydro-5-methyl-1,3-isobenzofurandione (9CI) (CA INDEX NAME)

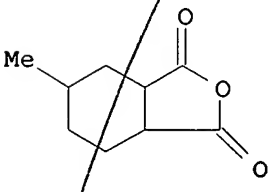
CM 1

CRN 195065-80-6
CMF C17 H26 O4



CM 2

CRN 19438-60-9
CMF C9 H12 O3

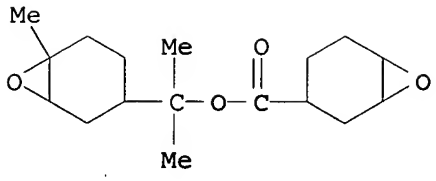


RN 683225-11-8 HCAPLUS

CN 7-Oxabicyclo[4.1.0]heptane-3-carboxylic acid, 1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl ester, polymer with hexahydro-5-methyl-1,3-isobenzofurandione and 7-oxabicyclo[4.1.0]hept-3-ylmethyl 7-oxabicyclo[4.1.0]heptane-3-carboxylate (9CI) (CA INDEX NAME)

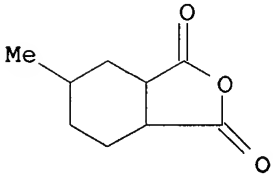
CM 1

CRN 195065-80-6
CMF C17 H26 O4



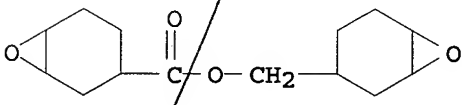
CM 2

CRN 19438-60-9
CMF C9 H12 O3



CM 3

CRN 2386-87-0
CMF C14 H20 O4



CC 37-5 (Plastics Manufacture and Processing)
IT 130030-49-8, ERL 4221-hexahydro-4-methylphthalic anhydride copolymer **195065-81-7**, Hexahydro-4-methylphthalic anhydride-α-Terp copolymer **683225-11-8**
(anal. of crosslink d. and glass transition temperature changes in thermally reworkable epoxy thermosets during thermal degradation)
REFERENCE COUNT: 47 THERE ARE 47 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 6 OF 32 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2003:769109 HCAPLUS
DOCUMENT NUMBER: 139:277441
TITLE: Reworkable thermosetting resin compositions and compounds useful therein
INVENTOR(S): Klemarczyk, Philip T.; Gong, Lie-Zhong
PATENT ASSIGNEE(S): Henkel Loctite Corporation, USA
SOURCE: U.S., 17 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6627683	B1	20030930	US 2000-885270	2000 0905
PRIORITY APPLN. INFO.:			US 2000-885270	2000 0905

AB Specific compds. useful in curable compns. as well as thermosets that are reworkable through thermal decomposition, include a cyclic hydrocarbon moiety including an oxirane or thiirane group and an aromatic ether moiety including an oxirane or thiirane group. The cyclic hydrocarbon moiety and the aromatic ether moiety are joined to each other through an oxycarbonyl-containing linkage or a thiocarbonyl-containing linkage, preferably a secondary or tertiary linkage. Compns. incorporating such compds. are capable of curing by exposure to a specific temperature, and are decomposable at a temperature in excess of the curing temperature, thus providing a composition which is reworkable.

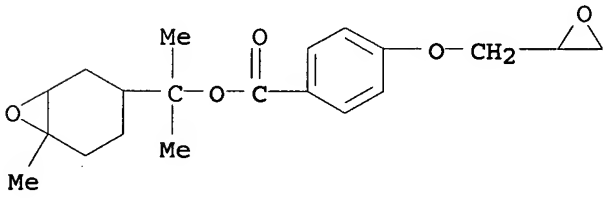
IT **604810-53-9P**
(reworkable thermosetting resin compns. and compds. useful therein)

RN 604810-53-9 HCAPLUS

CN Benzoic acid, 4-(oxiranylmethoxy)-, 1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl ester, polymer with hexahydromethyl-1,3-isobenzofurandione (9CI) (CA INDEX NAME)

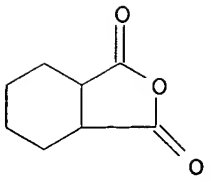
CM 1

CRN 604810-52-8
CMF C20 H26 O5



CM 2

CRN 25550-51-0
CMF C9 H12 O3
CCI IDS



D1—Me

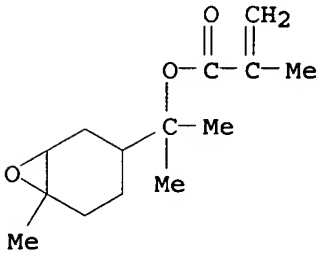
IC ICM C08K003-10
ICS C08L063-02
INCL 523457000; 523458000; 523466000; 528094000; 528099000; 528103000; 528378000; 528379000; 528380000; 549090000
CC 37-3 (Plastics Manufacture and Processing)
Section cross-reference(s): 38
IT **604810-53-9P**
(reworkable thermosetting resin compns. and compds. useful therein)
REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 7 OF 32 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2003:738540 HCAPLUS
DOCUMENT NUMBER: 139:365370
TITLE: Photo-cross-linkable Polymers Having Degradable Properties on Heating
AUTHOR(S): Shirai, Masamitsu; Kawaue, Akiya; Okamura, Haruyuki; Tsunooka, Masahiro
CORPORATE SOURCE: Department of Applied Chemistry Graduate School of Engineering, Osaka Prefecture University, Sakai Osaka, 599-8531, Japan
SOURCE: Chemistry of Materials (2003), 15(21), 4075-4081
CODEN: CMATEX; ISSN: 0897-4756
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Photo-cross-linkable polymers having degradable properties on heating were described. Copolymers of esters or salts of p-styrenesulfonic acid with a novel monomer having both an epoxy moiety and a tertiary ester moiety were synthesized and characterized. Polymer films containing a photoacid generator became insol. in organic solvents on UV irradiation The insol. fraction of the irradiated films was increased by post-exposure-baking at relatively low temps. (40-100 °C). When the cross-linked polymer films were baked at 120-200 °C, they became soluble in water. The effective bake temperature was dependent on the polymer structure. Thermal degradation of the cross-linked polymers was studied by TGA anal. and in situ FT-IR spectroscopy.
IT **460085-60-3P 460085-61-4P 460085-62-5P 476445-52-0P**
(photo-cross-linkable polymers having degradable properties on heating)
RN 460085-60-3 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 1-methyl-1-(6-methyl-7-

oxabicyclo[4.1.0]hept-3-yl)ethyl ester, polymer with cyclohexyl 4-ethenylbenzenesulfonate (9CI) (CA INDEX NAME)

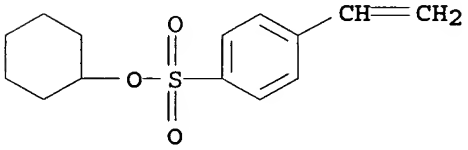
CM 1

CRN 354801-90-4
CMF C14 H22 O3



CM 2

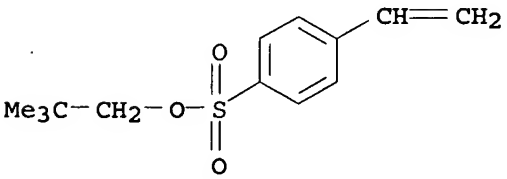
CRN 211308-93-9
CMF C14 H18 O3 S



RN 460085-61-4 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl ester, polymer with 2,2-dimethylpropyl 4-ethenylbenzenesulfonate (9CI) (CA INDEX NAME)

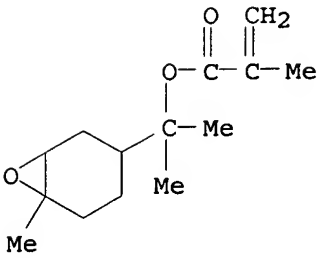
CM 1

CRN 443899-80-7
CMF C13 H18 O3 S



CM 2

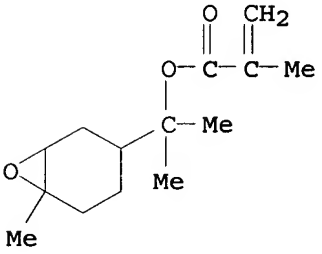
CRN 354801-90-4
CMF C14 H22 O3



RN 460085-62-5 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl ester, polymer with phenyl 4-ethenylbenzenesulfonate (9CI) (CA INDEX NAME)

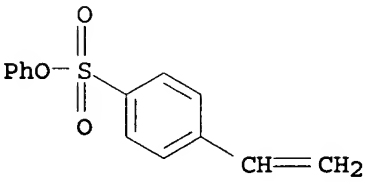
CM 1

CRN 354801-90-4
CMF C14 H22 O3



CM 2

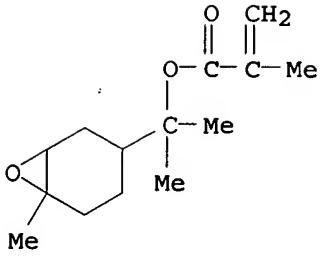
CRN 20996-57-0
CMF C14 H12 O3 S



RN 476445-52-0 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl ester, polymer with methyl 4-ethenylbenzenesulfonate (9CI) (CA INDEX NAME)

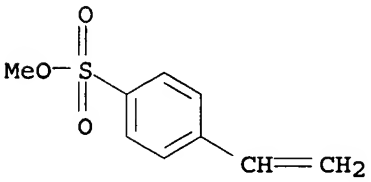
CM 1

CRN 354801-90-4
CMF C14 H22 O3



CM 2

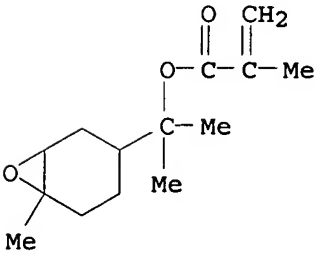
CRN 16736-97-3
CMF C9 H10 O3 S



IT **460085-60-3DP**, photocrosslinked, thermal degradated
460085-61-4DP, photocrosslinked, thermal degradated
460085-62-5DP, photocrosslinked, thermal degradated
476445-52-0DP, photocrosslinked, thermal degradated
(photo-cross-linkable polymers having degradable properties on heating)
RN 460085-60-3 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl ester, polymer with cyclohexyl 4-ethenylbenzenesulfonate (9CI) (CA INDEX NAME)

CM 1

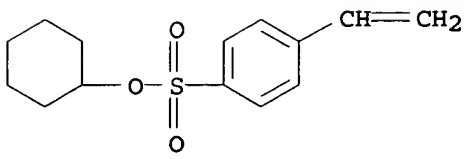
CRN 354801-90-4
CMF C14 H22 O3



CM 2

CRN 211308-93-9

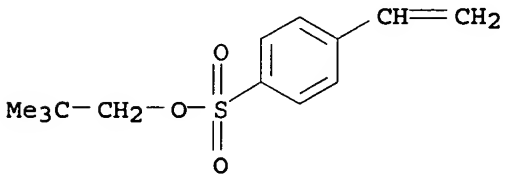
CMF C14 H18 O3 S



RN 460085-61-4 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl ester, polymer with 2,2-dimethylpropyl 4-ethenylbenzenesulfonate (9CI) (CA INDEX NAME)

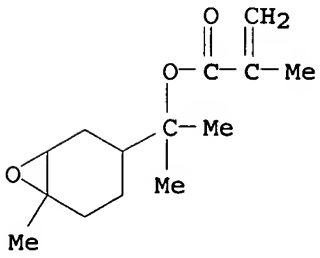
CM 1

CRN 443899-80-7
CMF C13 H18 O3 S



CM 2

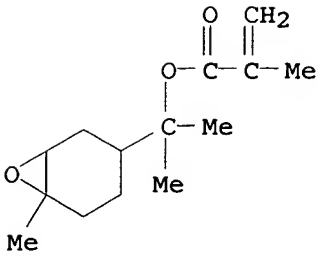
CRN 354801-90-4
CMF C14 H22 O3



RN 460085-62-5 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl ester, polymer with phenyl 4-ethenylbenzenesulfonate (9CI) (CA INDEX NAME)

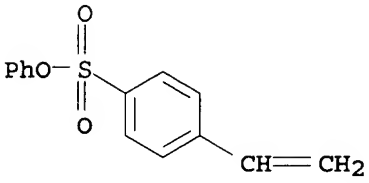
CM 1

CRN 354801-90-4
CMF C14 H22 O3



CM 2

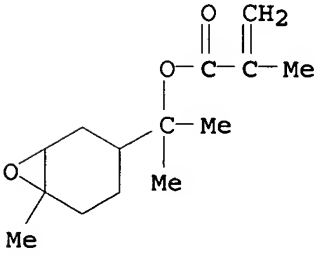
CRN 20996-57-0
CMF C14 H12 O3 S



RN 476445-52-0 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl ester, polymer with methyl 4-ethenylbenzenesulfonate (9CI) (CA INDEX NAME)

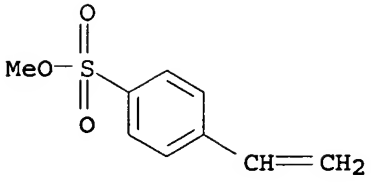
CM 1

CRN 354801-90-4
CMF C14 H22 O3



CM 2

CRN 16736-97-3
CMF C9 H10 O3 S

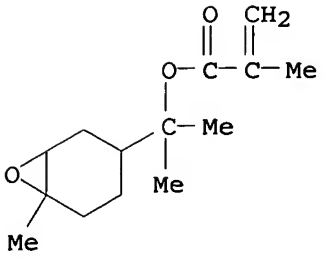


CC 35-8 (Chemistry of Synthetic High Polymers)
IT **460085-60-3P 460085-61-4P 460085-62-5P**
476445-52-0P 622851-55-2P
(photo-cross-linkable polymers having degradable properties on heating)
IT **460085-60-3DP**, photocrosslinked, thermal degradated
460085-61-4DP, photocrosslinked, thermal degradated
460085-62-5DP, photocrosslinked, thermal degradated
476445-52-0DP, photocrosslinked, thermal degradated
622851-55-2DP, photocrosslinked, thermal degradated
(photo-cross-linkable polymers having degradable properties on heating)
REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 8 OF 32 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2002:695061 HCAPLUS
DOCUMENT NUMBER: 138:4834
TITLE: Photocrosslinkable polymers with redissolution property
AUTHOR(S): Shirai, Masamitsu; Kawaue, Akiya; Okamura, Haruyuki; Tsunooka, Masahiro
CORPORATE SOURCE: Department of Applied Chemistry, Graduate School of Engineering, Osaka Prefecture University, Osaka, 599-8531, Japan
SOURCE: Chemistry Letters (2002), (9), 940-941
CODEN: CMLTAG; ISSN: 0366-7022
PUBLISHER: Chemical Society of Japan
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Polymers having both thermally degradable epoxy-containing moieties and sulfonic acid ester moieties in the side chain were prepared and characterized. On UV irradiation the polymer films containing photoacid generators became insol. The crosslinked polymer films became soluble in water after bake treatment at 120-200°C.
IT **460085-60-3DP**, photocrosslinking, then thermal degradation
460085-61-4DP, photocrosslinking, then thermal degradation
460085-62-5DP, photocrosslinking, then thermal degradation
476445-52-0DP, photocrosslinking, then thermal degradation
(photocrosslinkable polymers with redissoln. property)
RN 460085-60-3 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl ester, polymer with cyclohexyl 4-ethenylbenzenesulfonate (9CI) (CA INDEX NAME)

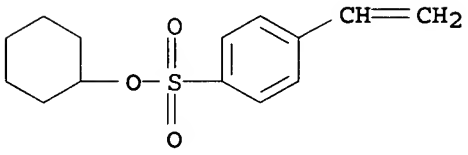
CM 1

CRN 354801-90-4
CMF C14 H22 O3



CM 2

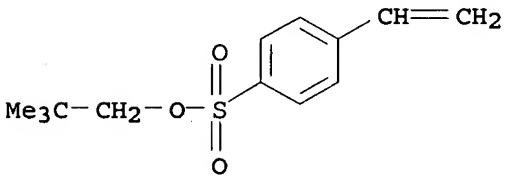
CRN 211308-93-9
CMF C14 H18 O3 S



RN 460085-61-4 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl ester, polymer with 2,2-dimethylpropyl 4-ethenylbenzenesulfonate (9CI) (CA INDEX NAME)

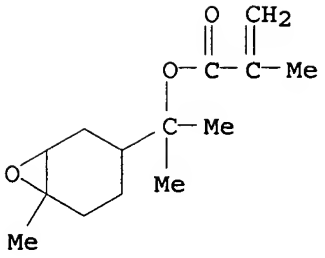
CM 1

CRN 443899-80-7
CMF C13 H18 O3 S



CM 2

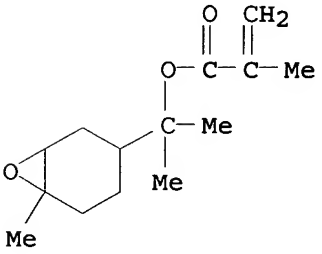
CRN 354801-90-4
CMF C14 H22 O3



RN 460085-62-5 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl ester, polymer with phenyl 4-ethenylbenzenesulfonate (9CI) (CA INDEX NAME)

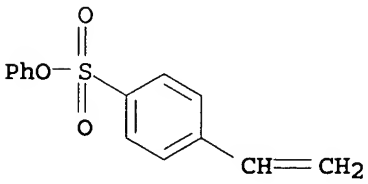
CM 1

CRN 354801-90-4
CMF C14 H22 O3



CM 2

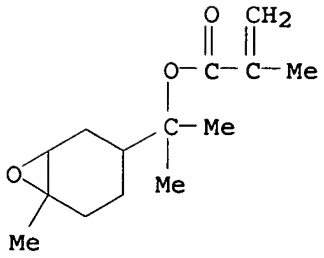
CRN 20996-57-0
CMF C14 H12 O3 S



RN 476445-52-0 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl ester, polymer with methyl 4-ethenylbenzenesulfonate (9CI) (CA INDEX NAME)

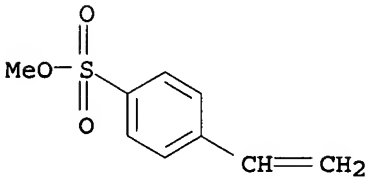
CM 1

CRN 354801-90-4
CMF C14 H22 O3



CM 2

CRN 16736-97-3
CMF C9 H10 O3 S



CC 35-4 (Chemistry of Synthetic High Polymers)
IT **460085-60-3DP**, photocrosslinking, then thermal degradation
460085-61-4DP, photocrosslinking, then thermal degradation
460085-62-5DP, photocrosslinking, then thermal degradation
476445-52-0DP, photocrosslinking, then thermal degradation
(photocrosslinkable polymers with redissoln. property)
REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 9 OF 32 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2002:559997 HCAPLUS
DOCUMENT NUMBER: 137:248280
TITLE: Thermally degradable photocrosslinking polymers
AUTHOR(S): Shirai, Masamitsu; Morishita, Satoshi; Kawaue, Akiya; Okamura, Haruyuki; Tsunooka, Masahiro
CORPORATE SOURCE: Department of Applied Chemistry, Graduate School of Engineering, Osaka Prefecture University, Osaka, 599-8531, Japan
SOURCE: PMSE Preprints (2002), 87, 384-386
CODEN: PPMRA9; ISSN: 1550-6703
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal; (computer optical disk)
LANGUAGE: English
AB Since photochem. crosslinked polymers are insol. and infusible networks, scratching or chemical treatments with strong acid or base must be applied to remove these networks from substrates. However, crosslinked polymers are difficult or impossible to thoroughly remove without damaging underlying materials. In this study we have synthesized polymers having both epoxy moieties and thermally cleavable tertiary ester moieties in the side chain. On

UV irradiation, the polymer films containing photo-acid generators became insol. in organic solvents. When the crosslinked polymer films were baked at 100-180 °C, they became soluble in methanol. The effective baking temperature was strongly dependent on polymer structure. The crosslinked polymers having styrene-sulfonic acid ester units became soluble in water after bake treatments. These polymers are important as a photocrosslinkable materials which can be removed by baking after use.

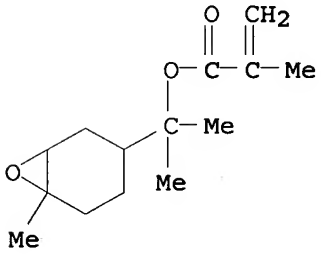
IT **354801-91-5P 401928-96-9P 401928-97-0P 460085-60-3P 460085-61-4P 460085-62-5P**
(preparation of photo-crosslinkable polymers with thermally degradable property)

RN 354801-91-5 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 354801-90-4
CMF C14 H22 O3

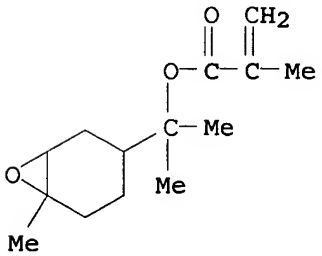


RN 401928-96-9 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1,1-dimethylethyl ester, polymer with 1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

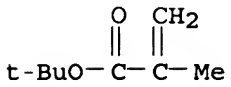
CRN 354801-90-4
CMF C14 H22 O3



CM 2

CRN 585-07-9

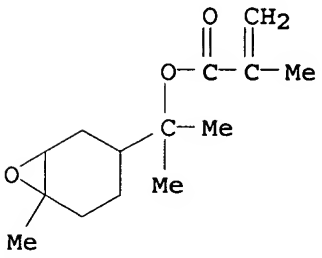
CMF C8 H14 O2



RN 401928-97-0 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl ester, polymer with 1-(1,1-dimethylethoxy)-4-ethenylbenzene (9CI) (CA INDEX NAME)

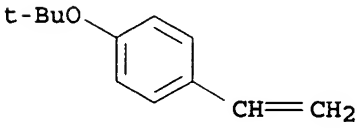
CM 1

CRN 354801-90-4
CMF C14 H22 O3



CM 2

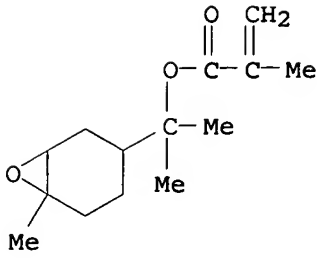
CRN 95418-58-9
CMF C12 H16 O



RN 460085-60-3 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl ester, polymer with cyclohexyl 4-ethenylbenzenesulfonate (9CI) (CA INDEX NAME)

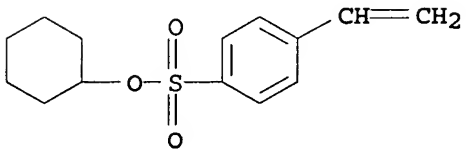
CM 1

CRN 354801-90-4
CMF C14 H22 O3



CM 2

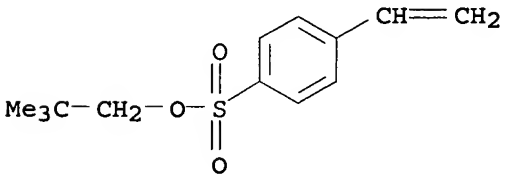
CRN 211308-93-9
CMF C14 H18 O3 S



RN 460085-61-4 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl ester, polymer with 2,2-dimethylpropyl 4-ethenylbenzenesulfonate (9CI) (CA INDEX NAME)

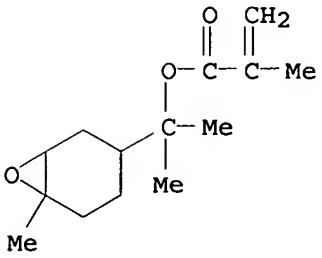
CM 1

CRN 443899-80-7
CMF C13 H18 O3 S



CM 2

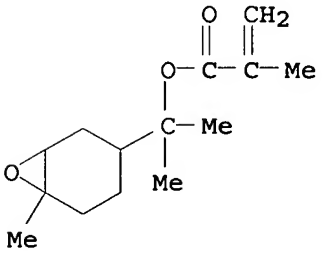
CRN 354801-90-4
CMF C14 H22 O3



RN 460085-62-5 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl ester, polymer with phenyl 4-ethenylbenzenesulfonate (9CI) (CA INDEX NAME)

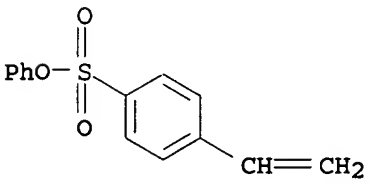
CM 1

CRN 354801-90-4
CMF C14 H22 O3



CM 2

CRN 20996-57-0
CMF C14 H12 O3 S



CC 37-3 (Plastics Manufacture and Processing)
IT **354801-91-5P 401928-96-9P 401928-97-0P**
460085-60-3P 460085-61-4P 460085-62-5P
(preparation of photo-crosslinkable polymers with thermally degradable property)
REFERENCE COUNT: 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 10 OF 32 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2002:386402 HCAPLUS
DOCUMENT NUMBER: 137:125487
TITLE: Syntheses and characterizations of thermally degradable epoxy resins. III
AUTHOR(S): Li, Haiying; Wang, Lejun; Jacob, Karl; Wong, C. P.
CORPORATE SOURCE: Packaging Research Center, School of Materials Science and Engineering, School of Textile & Fiber Engineering, Georgia Institute of Technology, Atlanta, GA, 30332, USA
SOURCE: Journal of Polymer Science, Part A: Polymer Chemistry (2002), 40(11), 1796-1807
CODEN: JPACEC; ISSN: 0887-624X
PUBLISHER: John Wiley & Sons, Inc.
DOCUMENT TYPE: Journal
LANGUAGE: English

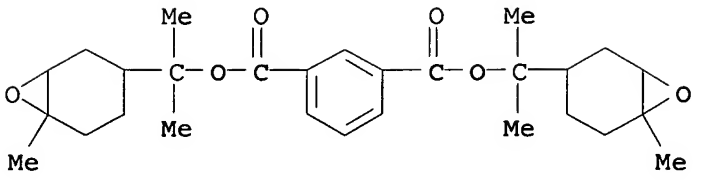
AB In flip-chip technol., the development of reworkable underfill materials has been one of the keys to the recovery of highly integrated and expensive board assembly designs through the replacement of defective chips. Two new diepoxides, one containing secondary ester linkages and the other containing tertiary ester linkages, that are thermally degradable below 300°, are synthesized. The secondary and tertiary ester diepoxides were synthesized in three and two steps, resp. Both compds. were characterized with NMR and Fourier-transform IR spectroscopy and formulated into underfill materials with an anhydride as the hardener and an imidazole as the catalyst. A dual-epoxy system was also formulated containing the tertiary ester diepoxide and a conventional aliphatic diepoxide, 3,4-epoxy cyclohexyl methyl-3,4-epoxycyclohexyl carboxylate (ERL-4221E), with the same hardener and catalyst. The curing kinetics of the formulas were studied with differential scanning calorimetry (DSC). Thermal properties of cured samples were characterized with DSC, thermogravimetric anal., and thermomech. anal. The dual-epoxy system showed a viscosity of 18.7 and 0.87 P at 25° and 100°, resp. The cured secondary, tertiary, and dual-epoxy formulas showed decomposition temps. around 265°, 190°, and 220°, glass transition temps. around 120°-140°, 110°-157°, and 140°-157°, and coeffs. of thermal expansion of 70, 72, and 64 ppm/°C below their glass-transition temps., resp. The shear strength of the cured dual-epoxy system decreased quickly with aging at 230°. The reworkability test showed that the removal of a chip underfilled with this material from the board was quite easy, and the residue on the board could be thoroughly removed with a mech. brush without obvious damage to the solder mask. The synthesized tertiary epoxide can be used as a reworkable underfill for flip-chip applications.

IT **298702-52-0P**, Bis[1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl] isophthalate-4-methylhexahydrophthalic anhydride copolymer **298702-53-1P**, Bis[1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl] isophthalate-ERL-4221E 4-methylhexahydrophthalic anhydride copolymer
(preparation of thermally degradable epoxy resins useful as reworkable underfill for flip-chip applications)

RN 298702-52-0 HCAPLUS
CN 1,3-Benzenedicarboxylic acid, bis[1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl] ester, polymer with hexahydro-5-methyl-1,3-isobenzofurandione (9CI) (CA INDEX NAME)

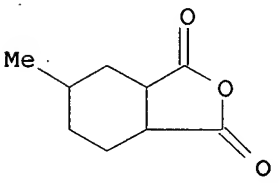
CM 1

CRN 298702-51-9
CMF C28 H38 O6



CM 2

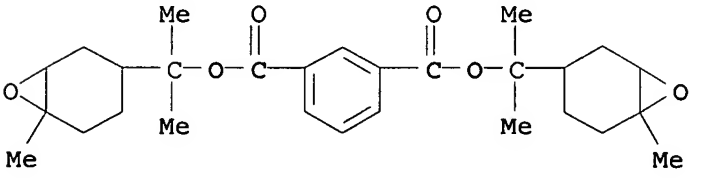
CRN 19438-60-9
CMF C9 H12 O3



RN 298702-53-1 HCAPLUS
CN 1,3-Benzenedicarboxylic acid, bis[1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl] ester, polymer with hexahydro-5-methyl-1,3-isobenzofurandione and 7-oxabicyclo[4.1.0]hept-3-ylmethyl 7-oxabicyclo[4.1.0]heptane-3-carboxylate (9CI) (CA INDEX NAME)

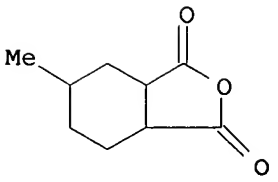
CM 1

CRN 298702-51-9
CMF C28 H38 O6



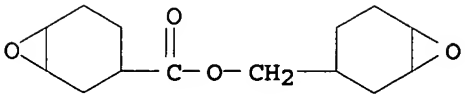
CM 2

CRN 19438-60-9
CMF C9 H12 O3



CM 3

CRN 2386-87-0
CMF C14 H20 O4



CC 35-7 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 37, 38
IT **298702-52-0P**, Bis[1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl] isophthalate-4-methylhexahydrophthalic anhydride copolymer **298702-53-1P**, Bis[1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl] isophthalate-ERL-4221E 4-methylhexahydrophthalic anhydride copolymer 429685-44-9P, Bis[1-(7-oxabicyclo[4.1.0]hept-3-yl)ethyl] isophthalate-4-methylhexahydrophthalic anhydride copolymer
(preparation of thermally degradable epoxy resins useful as reworkable underfill for flip-chip applications)
REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 11 OF 32 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2002:376079 HCAPLUS
DOCUMENT NUMBER: 137:279868
TITLE: Syntheses and characterizations of a controlled thermally degradable epoxy resin system for electronic packaging
AUTHOR(S): Li, Haiying; Wang, Lejun; Wong, C. P.
CORPORATE SOURCE: School of Materials Science and Engineering Packaging Research Center, Georgia Institute of Technology, Atlanta, GA, 30332, USA
SOURCE: Proceedings - International Symposium on Advanced Packaging Materials: Processes, Properties and Interfaces, Braselton, GA, United States, Mar. 11-14, 2001 (2001), Meeting Date 2001, 268-274. Institute of Electrical and Electronics Engineers: New York, N. Y.
CODEN: 69CPT9; ISBN: 0-930815-64-5
DOCUMENT TYPE: Conference
LANGUAGE: English
AB Two diepoxides with secondary and tertiary ester linkages that are thermally degradable below 300° were synthesized in three

and two steps, resp. Both compds. were characterized by NMR and FTIR spectroscopy and formulated into underfill materials with an anhydride as hardener and imidazole as catalyst. A dual-epoxy system was also formulated containing the tertiary ester diepoxide and a conventional aliphatic diepoxide, ERL-422IE, with the same hardener and catalyst. The curing kinetics of the materials was studied using DSC and thermal properties of cured samples were characterized by DSC, TGA, and TMA. The dual-epoxy system had viscosity of 18.7 and 0.87 P at 25° and 100°, resp. The cured secondary, tertiary, and dual-epoxy materials have decomposition temperature around 265°, 190° and 220°, glass transition temperature (Tg) around 120-140°, 110-157° and 140-157°, and CTE of 70 ppm/°, 72 ppm/°, and 64ppm/°, below Tg, resp. The shear strength of the cured dual-epoxy system decreased rapidly upon ageing at 230°. The reworkability tests showed that removal from the board of a chip underfilled with this material was quite easy, and the residue on the board could be thoroughly removed up with a mech. brush without obvious damage of the solder mask. The tertiary epoxide can be used as a reworkable underfill of flip-chips.

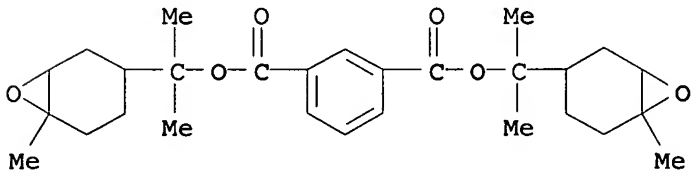
IT **298702-52-0P 298702-53-1P**
(preparation and crosslinking and controlled thermal degradation of diepoxy resin system as underfill for electronic packaging)

RN 298702-52-0 HCAPLUS

CN 1,3-Benzenedicarboxylic acid, bis[1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl] ester, polymer with hexahydro-5-methyl-1,3-isobenzofurandione (9CI) (CA INDEX NAME)

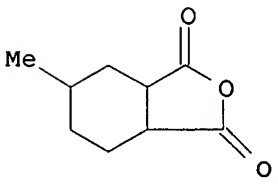
CM 1

CRN 298702-51-9
CMF C28 H38 O6



CM 2

CRN 19438-60-9
CMF C9 H12 O3



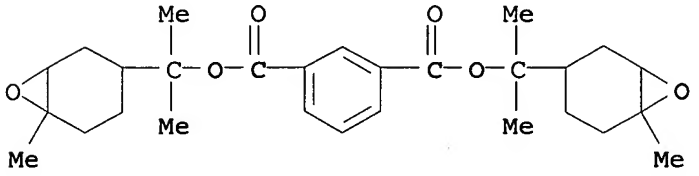
RN 298702-53-1 HCAPLUS

CN 1,3-Benzenedicarboxylic acid, bis[1-methyl-1-(6-methyl-7-

oxabicyclo[4.1.0]hept-3-yl)ethyl] ester, polymer with hexahydro-5-methyl-1,3-isobenzofurandione and 7-oxabicyclo[4.1.0]hept-3-ylmethyl 7-oxabicyclo[4.1.0]heptane-3-carboxylate (9CI) (CA INDEX NAME)

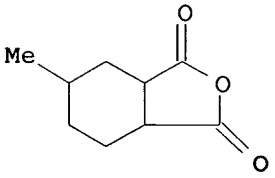
CM 1

CRN 298702-51-9
CMF C28 H38 O6



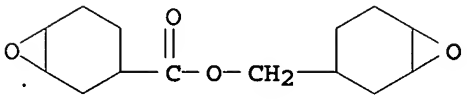
CM 2

CRN 19438-60-9
CMF C9 H12 O3



CM 3

CRN 2386-87-0
CMF C14 H20 O4



CC 37-6 (Plastics Manufacture and Processing)
Section cross-reference(s): 76
IT **298702-52-0P 298702-53-1P** 429685-44-9P
(preparation and crosslinking and controlled thermal degradation of diepoxy resin system as underfill for electronic packaging)
REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 12 OF 32 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2002:221231 HCAPLUS
DOCUMENT NUMBER: 136:248454
TITLE: No-flow reworkable epoxy underfill

compositions for protecting, encapsulating, fabricating in flip-chip applications
INVENTOR(S): Wang, Lejun; Li, Haiying; Wong, Ching-ping
PATENT ASSIGNEE(S): USA
SOURCE: U.S. Pat. Appl. Publ., 28 pp., Cont.-in-part of U. S. Ser. No. 820,549.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 3
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.		DATE
US 2002035201	A1	20020321	US 2001-860081		20010517
US 6570029	B2	20030527			
US 2002013420	A1	20020131	US 2001-820549		20010329
US 6498260	B2	20021224			
PRIORITY APPLN. INFO.:			US 2000-193356P	P	20000329
			US 2000-205590P	P	20000517
			US 2001-820549	A2	20010329

AB The encapsulant includes a cycloaliph. epoxide, an organic hardener, a curing accelerator, and a fluxing agent where the cycloaliph. epoxide includes a carbonate or carbamate group. The encapsulant can also include a filler, such as a SiO2 filler.

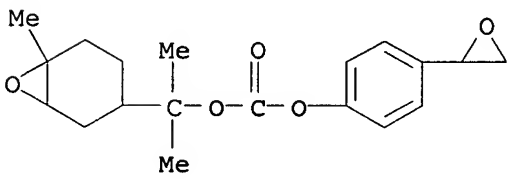
IT **362513-25-5P**
(no-flow reworkable carbonate or carbamate group-containing epoxy underfills for flip-chip applications)

RN 362513-25-5 HCAPLUS

CN Carbonic acid, 1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl 4-oxiranylphenyl ester, polymer with hexahydro-5-methyl-1,3-isobenzofurandione (9CI) (CA INDEX NAME)

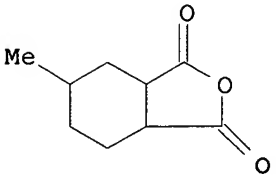
CM 1

CRN 362513-20-0
CMF C19 H24 O5



CM 2

CRN 19438-60-9
CMF C9 H12 O3



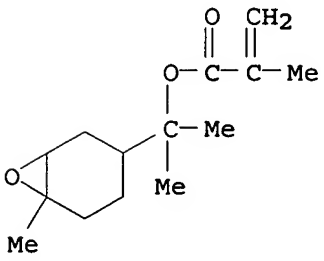
IC ICM C08G071-04
INCL 524873000
CC 37-6 (Plastics Manufacture and Processing)
Section cross-reference(s): 38, 76
IT 244760-72-3P 244760-75-6P 244760-81-4P 244760-84-7P
244760-87-0P 244760-88-1P 307929-99-3P 307930-00-3P
307930-01-4P **362513-25-5P** 362513-26-6P
(no-flow reworkable carbonate or carbamate group-containing epoxy underfills for flip-chip applications)

L32 ANSWER 13 OF 32 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2002:11232 HCAPLUS
DOCUMENT NUMBER: 136:217428
TITLE: Photo-Cross-Linkable Polymers with Thermally Degradable Property
AUTHOR(S): Shirai, Masamitsu; Morishita, Satoshi; Okamura, Haruyuki; Tsunooka, Masahiro
CORPORATE SOURCE: Department of Applied Chemistry Graduate School of Engineering, Osaka Prefecture University, Sakai, Osaka, 599-8531, Japan
SOURCE: Chemistry of Materials (2002), 14(1), 334-340
CODEN: CMATEX; ISSN: 0897-4756
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Polymers having both epoxy moieties and thermally cleavable tertiary ester moieties in the side chain were synthesized and characterized. On UV irradiation, polymer films containing photoacid generators (PAG) such as 9-fluorenilideneimino p-toluenesulfonate (FITS) and triphenylsulfonium triflate (TPST) became insol. in THF. The insol. fraction of the irradiated films was increased by postexposure-baking at 90 °C if FITS was used as a PAG. When the crosslinked polymer films were baked at 160-180 °C, they became soluble in methanol. The effective baking temperature was dependent on the type of PAG used and on the polymer structure. Thermal degradation of the photochem. induced network polymers was studied by FT-IR spectroscopy, TGA anal., and film thickness changes.
IT **354801-91-5P 401928-96-9P 401928-97-0P**
(preparation of photo-crosslinkable polymers with thermally degradable property)
RN 354801-91-5 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl ester, homopolymer (9CI) (CA

INDEX NAME)

CM 1

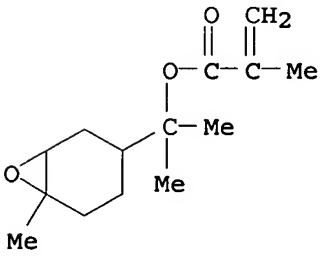
CRN 354801-90-4
CMF C14 H22 O3



RN 401928-96-9 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 1,1-dimethylethyl ester, polymer with 1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

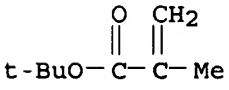
CM 1

CRN 354801-90-4
CMF C14 H22 O3



CM 2

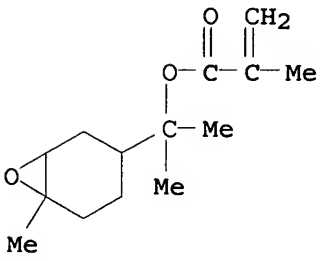
CRN 585-07-9
CMF C8 H14 O2



RN 401928-97-0 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl ester, polymer with 1-(1,1-dimethylethoxy)-4-ethenylbenzene (9CI) (CA INDEX NAME)

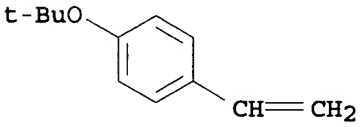
CM 1

CRN 354801-90-4
CMF C14 H22 O3



CM 2

CRN 95418-58-9
CMF C12 H16 O



CC 37-3 (Plastics Manufacture and Processing)
IT **354801-91-5P 401928-96-9P 401928-97-0P**
401928-98-1P
(preparation of photo-crosslinkable polymers with thermally degradable property)
REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 14 OF 32 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2001:926207 HCAPLUS
DOCUMENT NUMBER: 136:402680
TITLE: Study of a controlled thermally degradable epoxy resin system for electronic packaging
AUTHOR(S): Li, Haiying; Wang, Lejun; Wong, C. P.
CORPORATE SOURCE: Packaging Research Center Georgia Institute of Technology, School of Materials Science and Engineering, Atlanta, GA, 30332, USA
SOURCE: Proceedings - Electronic Components & Technology Conference (2001), 51st, 1356-1361
CODEN: PETCES
PUBLISHER: Institute of Electrical and Electronics Engineers
DOCUMENT TYPE: Journal
LANGUAGE: English
AB This paper reports the synthesis, formulation and characterizations of two new diepoxides, one contains secondary and the other contains tertiary ester linkages that are thermally degradable below 300°. The secondary and the tertiary ester diepoxides were synthesized in three and two steps, resp. Both compds. were characterized with NMR and FT-IR spectroscopies,

and formulated into underfill materials with an anhydride as hardener and an imidazole as catalyst. A dual-epoxy system was also formulated containing the tertiary ester diepoxide and a conventional aliphatic diepoxide, ERL-4221E, with the same hardener and catalyst. The curing kinetics of the formulas was studied with differential scanning calorimetry (DSC). Thermal properties of cured samples were characterized with DSC, thermogravimetric anal. (TGA) and Thermomech. anal. (TMA). The dual-epoxy system showed a viscosity of 18.7, and 0.87P at 25° and 100°, resp. The cured secondary, tertiary and dual-epoxy formulas showed decomposition temps. around 265°, 190° and 220°, glass transition temps. (Tg) around 120°-140°, 110°-157° and 140°-157°, and CTE (coefficient of thermal expansion) of 70 ppm/°C, 72 ppm/°C and 64 ppm/°C below their Tg, resp. The shear strength of the cured dual-epoxy system decreased quickly upon being aged at 230°. The reworkability test showed that the removal from the board of a chip underfilled with this material was quite easy, and the residue on the board could be thoroughly removed with a mech. brush without obvious damage of the solder mask. The synthesized tertiary epoxide can be used as a reworkable underfill for flip-chip application.

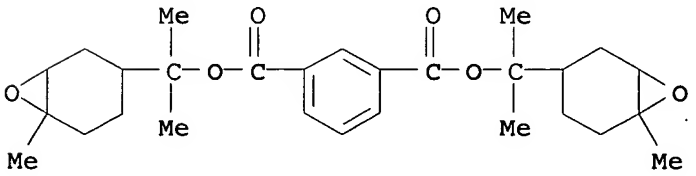
IT **298702-52-0P**, Bis[1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl] isophthalate-4-methylhexahydrophthalic anhydride copolymer **298702-53-1P**, Bis[1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl] isophthalate-ERL 4221E-4-methylhexahydrophthalic anhydride copolymer
(preparation and properties of controlled thermally degradable epoxy resin system for electronic packaging)

RN 298702-52-0 HCAPLUS

CN 1,3-Benzenedicarboxylic acid, bis[1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl] ester, polymer with hexahydro-5-methyl-1,3-isobenzofurandione (9CI) (CA INDEX NAME)

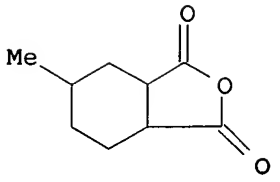
CM 1

CRN 298702-51-9
CMF C28 H38 O6



CM 2

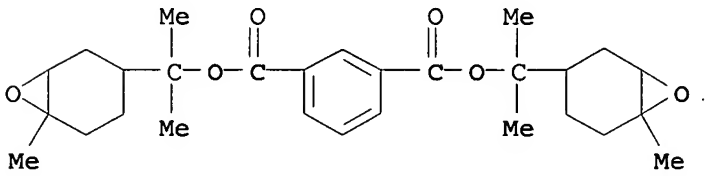
CRN 19438-60-9
CMF C9 H12 O3



RN 298702-53-1 HCAPLUS
CN 1,3-Benzenedicarboxylic acid, bis[1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl] ester, polymer with hexahydro-5-methyl-1,3-isobenzofurandione and 7-oxabicyclo[4.1.0]hept-3-ylmethyl 7-oxabicyclo[4.1.0]heptane-3-carboxylate (9CI) (CA INDEX NAME)

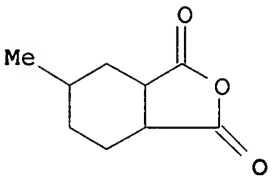
CM 1

CRN 298702-51-9
CMF C28 H38 O6



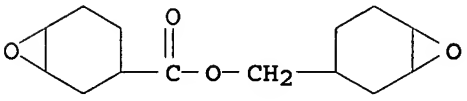
CM 2

CRN 19438-60-9
CMF C9 H12 O3



CM 3

CRN 2386-87-0
CMF C14 H20 O4



CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 37, 76

IT **298702-52-0P**, Bis[1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl] isophthalate-4-methylhexahydrophthalic anhydride copolymer **298702-53-1P**, Bis[1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl] isophthalate-ERL 4221E-4-methylhexahydrophthalic anhydride copolymer 429685-44-9P, Bis[1-(7-oxabicyclo[4.1.0]hept-3-yl)ethyl] isophthalate-4-methylhexahydrophthalic anhydride copolymer
(preparation and properties of controlled thermally degradable epoxy resin system for electronic packaging)

REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 15 OF 32 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2001:851529 HCAPLUS
DOCUMENT NUMBER: 136:14026
TITLE: No-flow reworkable epoxy underfills for flip-chip applications
INVENTOR(S): Wang, Lejun; Wong, Ching-Ping; Li, Haiying
PATENT ASSIGNEE(S): Georgia Tech Research Corporation, USA
SOURCE: PCT Int. Appl., 50 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 3
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001088959	A2	20011122	WO 2001-US15843	2001 0517
WO 2001088959	A3	20020328		
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
US 2002013420	A1	20020131	US 2001-820549	2001 0329
US 6498260	B2	20021224		
AU 2001064625	A5	20011126	AU 2001-64625	2001 0517
PRIORITY APPLN. INFO.:			US 2000-205590P P	2000 0517
			US 2001-820549 A	2001 0329

US 2000-193356P P 2000 0329

WO 2001-US15843 W 2001 0517

AB A no-flow reworkable epoxy underfill is provided for use in an electronic packaged system which incorporates an integrated circuit, an organic printed wire board, and ≥1 eutectic solder joint formed there-between. An exemplary embodiment of the encapsulant includes: a cycloaliph. epoxide; an organic hardener; a curing accelerator; and a fluxing agent in which the cycloaliph. epoxide includes a carbonate or carbamate group. The encapsulant can also include a filler, such as a SiO2 filler. A method is also provided for forming the aforementioned reworkable epoxy underfills.

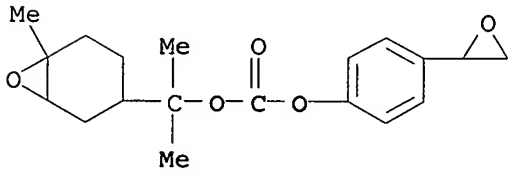
IT **362513-25-5P**
(no-flow reworkable epoxy underfills for flip-chip applications)

RN 362513-25-5 HCAPLUS

CN Carbonic acid, 1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl 4-oxiranylphenyl ester, polymer with hexahydro-5-methyl-1,3-isobenzofurandione (9CI) (CA INDEX NAME)

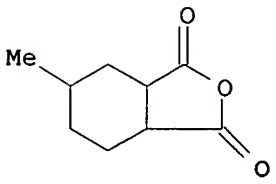
CM 1

CRN 362513-20-0
CMF C19 H24 O5



CM 2

CRN 19438-60-9
CMF C9 H12 O3



IC ICM H01L
CC 76-3 (Electric Phenomena)
Section cross-reference(s): 38
IT 244760-72-3P 244760-75-6P 244760-81-4P 244760-84-7P

244760-87-0P 244760-88-1P 307929-99-3P 307930-00-3P
307930-01-4P **362513-25-5P** 362513-26-6P
(no-flow reworkable epoxy underfills for flip-chip applications)

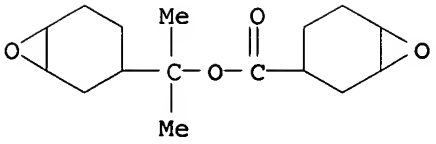
L32 ANSWER 16 OF 32 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2001:755208 HCAPLUS
DOCUMENT NUMBER: 136:70598
TITLE: Characterization of thermally re-workable thermosets: materials for environmentally friendly processing and reuse
AUTHOR(S): Chen, J.-S.; Ober, C. K.; Poliks, M. D.
CORPORATE SOURCE: Bard Hall, Department of Materials Science and Engineering, Cornell University, Ithaca, NY, 14850, USA
SOURCE: Polymer (2001), Volume Date 2002, 43(1), 131-139
CODEN: POLMAG; ISSN: 0032-3861
PUBLISHER: Elsevier Science Ltd.
DOCUMENT TYPE: Journal
LANGUAGE: English

AB In recent years, several research groups have created re-workable thermoset systems. A prominent use of such materials is in microelectronics packaging areas to enable the repair or reprocessing of electronic components. A wider implication of such an application is that it may facilitate the future recycling or reuse of older computer systems. Recent studies indicate millions of computers are discarded each year due to obsolescence or other factors. The research presented here involves studies of thermosets incorporating a cycloaliph. epoxy monomer that contains a tertiary ester linkage. When part of a fully crosslinked network, the re-workable epoxy unit will disconnect the network under predetd. thermal conditions. We studied the chemical and thermo-mech. breakdown mechanisms of the monomer and resulting polymer networks as a function of their rework conditions. Via anal. chemical techniques, the materials were found to degrade in a controlled fashion consistent with prior polyester degradation studies. Monitoring the change in glass transition temperature of the materials under rework conditions yielded both kinetic and mechanistic data of the degradation process, as well as providing insight into the materials' mech. strength.

IT **195065-79-3P 195065-81-7P**
(thermally re-workable thermosets as materials for environmentally friendly processing and reuse)
RN 195065-79-3 HCAPLUS
CN 7-Oxabicyclo[4.1.0]heptane-3-carboxylic acid, 1-methyl-1-(7-oxabicyclo[4.1.0]hept-3-yl)ethyl ester, polymer with hexahydro-5-methyl-1,3-isobenzofurandione (9CI) (CA INDEX NAME)

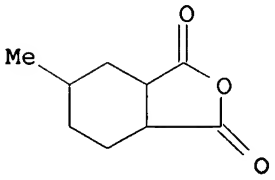
CM 1

CRN 195065-78-2
CMF C16 H24 O4



CM 2

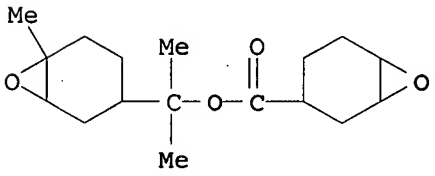
CRN 19438-60-9
CMF C9 H12 O3



RN 195065-81-7 HCAPLUS
CN 7-Oxabicyclo[4.1.0]heptane-3-carboxylic acid, 1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl ester, polymer with hexahydro-5-methyl-1,3-isobenzofurandione (9CI) (CA INDEX NAME)

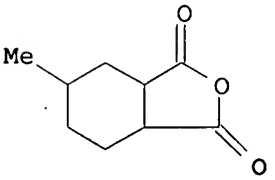
CM 1

CRN 195065-80-6
CMF C17 H26 O4



CM 2

CRN 19438-60-9
CMF C9 H12 O3



CC 37-6 (Plastics Manufacture and Processing)
IT **195065-79-3P 195065-81-7P**
(thermally re-workable thermosets as materials for

environmentally friendly processing and reuse)
REFERENCE COUNT: 23 THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 17 OF 32 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2001:730881 HCAPLUS
DOCUMENT NUMBER: 135:257990
TITLE: Thermally degradable epoxy underfills for flip-chip applications
INVENTOR(S): Wang, Lejun; Wong, Ching-Ping; Li, Haiying
PATENT ASSIGNEE(S): Georgia Tech Research Corporation, USA
SOURCE: PCT Int. Appl., 48 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 3
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001072898	A1	20011004	WO 2001-US10095	2001 0329
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
AU 2001051096	A5	20011008	AU 2001-51096	2001 0329

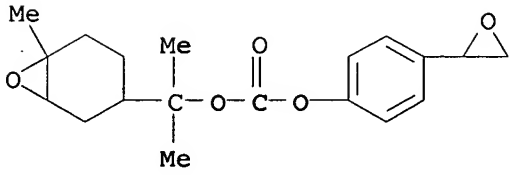
PRIORITY APPLN. INFO.:	US 2000-193356P	P	2000 0329
	WO 2001-US10095	W	2001 0329

AB A reworkable epoxy underfill for use in electronic packaged system comprises a cycloaliph. epoxide, an organic hardener, and a curing accelerator, and optionally a filler, such as a silica filler. Thus, di-3,4-epoxycyclohexylmethyl carbonate/hexahydromethylphthalic anhydride 1/0.8 mol and imidazole 1% were mixed to give a resin, showing Tg 176°, storage modulus 2.6 GPa, and viscosity (25°) 0.24 Pa·s.
IT **362513-25-5P**
(thermally degradable epoxy underfills for flip-chip applications)
RN 362513-25-5 HCAPLUS
CN Carbonic acid, 1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl 4-oxiranylphenyl ester, polymer with hexahydro-5-methyl-

1,3-isobenzofurandione (9CI) (CA INDEX NAME)

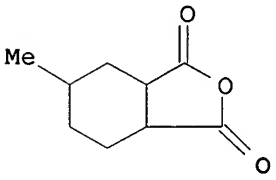
CM 1

CRN 362513-20-0
CMF C19 H24 O5



CM 2

CRN 19438-60-9
CMF C9 H12 O3



IC ICM C08L063-00
ICS C08G059-02
CC 37-6 (Plastics Manufacture and Processing)
IT 307930-01-4P **362513-25-5P**
(thermally degradable epoxy underfills for flip-chip applications)
REFERENCE COUNT: 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 18 OF 32 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2001:602558 HCAPLUS
DOCUMENT NUMBER: 135:187711
TITLE: Acid-crosslinkable polymer with resolubility after heating and photosensitive resin composition using it in combination with photoacid generator
INVENTOR(S): Shirai, Masamitsu; Kakuoka, Masahiro
PATENT ASSIGNEE(S): Foundation for Scientific Technology Promotion, Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE

JP 2001226430	A2	20010821	JP 2000-34613	2000 0214
PRIORITY APPLN. INFO.:			JP 2000-34613	2000 0214

AB The polymer has chemical groups having acid-crosslinkable terminals, tertiary C or O of ester or aryl ether linkage directly linked to the chemical groups as its side chain. The composition showing photocrosslinkable and thermally decomposable properties is composed of the above polymer and a photoacid generator. Cured products of the composition can be modified to easily decomposable structures by heating under milder condition.

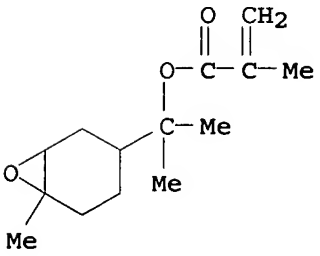
IT **354801-91-5P**
(acid-crosslinkable polymer with resoly. after heating for photoresist using in combination with photoacid generator)

RN 354801-91-5 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 354801-90-4
CMF C14 H22 O3



IC ICM C08F020-28
ICS C08F002-48; C08F020-38; C08F030-08; C08J003-24; G03F007-038

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 38

IT **354801-91-5P**
(acid-crosslinkable polymer with resoly. after heating for photoresist using in combination with photoacid generator)

L32 ANSWER 19 OF 32 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER:	2000:700418 HCAPLUS
DOCUMENT NUMBER:	133:362992
TITLE:	Syntheses and characterizations of thermally reworkable epoxy resins II
AUTHOR(S):	Wang, Lejun; Li, Haiying; Wong, C. P.
CORPORATE SOURCE:	School of Materials Science and Engineering and Packaging Research Center, Georgia Institute of Technology, Atlanta, GA, 30332, USA
SOURCE:	Journal of Polymer Science, Part A: Polymer

Chemistry (2000), 38(20), 3771-3782
CODEN: JPACEC; ISSN: 0887-624X
PUBLISHER: John Wiley & Sons, Inc.
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Flip-chip technol. is a face-down attachment of the active side of the silicon device onto the substrate. It is the ultimate packaging solution to integrated circuit devices used in 21st century electronic systems to meet the requirements of small size, high performance, and low cost. Underfill technol. enhances the flip chip on board cycle fatigue life and thus dramatically extends the application of flip-chip technol. in electronics from high-end to cost-sensitive commodity products. Reworkable underfill is the key to addressing the non-reworkability of the underfill, so it is very important to electronic packaging. To meet the need for reworkable epoxy resins, four cycloaliph. epoxides containing thermally breakable carbonate linkages have been synthesized and characterized. These materials are shown to undergo curing reactions with cyclic anhydride similarly to a com. cycloaliph. diepoxide. Furthermore, these cured epoxides start to decompose at temps. lower than 350°, the decomposition temperature for the cured sample of the com. cycloaliph. diepoxide. Two formulations based on two carbonate-containing diepoxides start network breakdown around 220°, which is the targeted rework temperature Moreover, these two formulations have similar properties, including the glass-transition temperature, coefficient of thermal expansion, storage modulus, viscosity, and adhesion, compared to the standard com. diepoxide formulation. storage modulus. As such, these two formulations are potential candidates for a successful reworkable underfill.

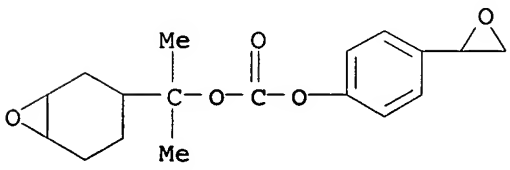
IT **307930-02-5P**
(syntheses and characterizations of thermally reworkable epoxy resins II)

RN 307930-02-5 HCAPLUS

CN Carbonic acid, 1-methyl-1-(7-oxabicyclo[4.1.0]hept-3-yl)ethyl 4-oxiranylphenyl ester, polymer with hexahydro-5-methyl-1,3-isobenzofurandione (9CI) (CA INDEX NAME)

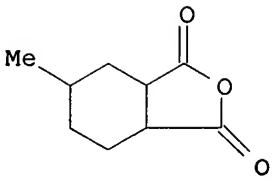
CM 1

CRN 307929-98-2
CMF C18 H22 O5



CM 2

CRN 19438-60-9
CMF C9 H12 O3



CC 35-2 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 38, 76
IT 307929-99-3P, Di-3,4-epoxycyclohexylmethyl Carbonate-4-methylhexahydrophthalic anhydride copolymer 307930-00-3P 307930-01-4P **307930-02-5P**
(syntheses and characterizations of thermally reworkable epoxy resins II)
REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 20 OF 32 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2000:688295 HCAPLUS
DOCUMENT NUMBER: 133:267620
TITLE: Reworkable thermosetting resin compositions for sealing semiconductors
INVENTOR(S): Torres-Filho, Afranio; Crane, Lawrence N.; Konarski, Mark M.; Szczepaniak, Zbigniew A.
PATENT ASSIGNEE(S): Loctite Corporation, USA
SOURCE: PCT Int. Appl., 41 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000056799	A1	20000928	WO 2000-US7452	2000 0322
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
CA 2331790	AA	20000928	CA 2000-2331790	2000 0322
EP 1090057	A1	20010411	EP 2000-916567	2000 0322
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				

JP 2002540235 T2 20021126 JP 2000-606659 2000 0322

PRIORITY APPLN. INFO.: US 1999-274943 A 1999 0323

WO 2000-US7452 W 2000 0322

OTHER SOURCE(S): MARPAT 133:267620

AB A thermosetting resin composition capable of sealing underfilling between a semiconductor device including a semiconductor chip mounted on a carrier substrate and a circuit board to which the semiconductor device is elec. connected, reaction products of which are capable of softening and losing their adhesiveness under exposure to temperature conditions in excess of those used to cure the composition, comprises: (a) an epoxy resin component, a portion of which comprises an epoxy compound having at least one thermally cleavable linkage; (b) optionally, an inorg. filler component; and (c) a curing agent component comprising a member selected from the group consisting of anhydride compds., amine compds., amide compds., imidazole compds., and combinations thereof. The thermosetting resin compns. are useful for mounting onto a circuit board semiconductor devices, such as chip size or chip scale packages ("CSPs"), ball grid arrays ("BGAs"), and the like, each of which having a semiconductor chip, such as large scale integration ("LSI"), on a carrier substrate. The compns. of this invention are reworkable when subjected to appropriate conditions.

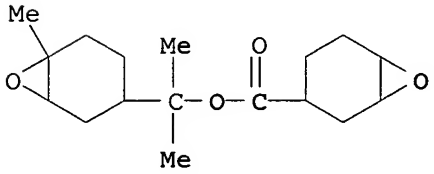
IT **297765-36-7P**
(reworkable thermosetting resin compns. for sealing semiconductors)

RN 297765-36-7 HCAPLUS

CN 7-Oxabicyclo[4.1.0]heptane-3-carboxylic acid, 1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl ester, polymer with hexahydro-1,3-isobenzofurandione, hexahydromethyl-1,3-isobenzofurandione and 2,2'-[methylenebis(phenyleneoxymethylene)]bis[oxirane] (9CI) (CA INDEX NAME)

CM 1

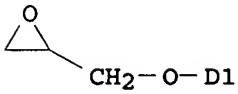
CRN 195065-80-6
CMF C17 H26 O4



CM 2

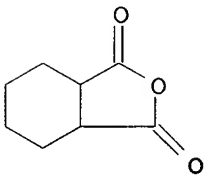
CRN 39817-09-9
CMF C19 H20 O4
CCI IDS

1/2 [D1—CH_2—D1]



CM 3

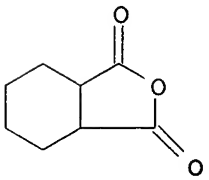
CRN 25550-51-0
CMF C9 H12 O3
CCI IDS



D1—Me

CM 4

CRN 85-42-7
CMF C8 H10 O3



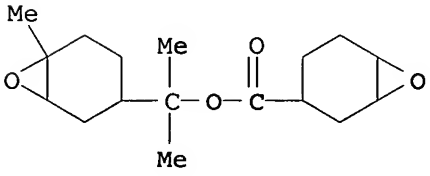
IC ICM C08G059-24
ICS H01L021-56
CC 37-6 (Plastics Manufacture and Processing)
Section cross-reference(s): 76
IT **297765-36-7P** 297765-38-9P 297765-39-0P
(reworkable thermosetting resin compns. for sealing

semiconductors)
REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 21 OF 32 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2000:594240 HCAPLUS
DOCUMENT NUMBER: 133:297079
TITLE: Reworkable thermosets: enabling disassembly of microelectronic components
AUTHOR(S): Chen, J. S.; Ober, C. K.; Poliks, M. D.
CORPORATE SOURCE: Department of Materials Science and Engineering, Cornell University, Ithaca, NY, 14853, USA
SOURCE: Polymer Preprints (American Chemical Society, Division of Polymer Chemistry) (2000), 41(2), 1842-1843
CODEN: ACPPAY; ISSN: 0032-3934
PUBLISHER: American Chemical Society, Division of Polymer Chemistry
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The breakdown mechanism of the monomer and networks from α-Terp epoxy resin (1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl ester of 7-Oxabicyclo[4.1.0]heptane-3-carboxylic acid) is studied. The resin cleaves in a manner that enables reworkability in fully cured thermoset networks that contain it. The relationship between glass temperature and thermal treatment and the application in the microelectronics are also discussed.
IT **195065-81-7**
(breakdown mechanism of reworkable epoxy resin thermosets and enabling disassembly of microelectronic components)
RN 195065-81-7 HCAPLUS
CN 7-Oxabicyclo[4.1.0]heptane-3-carboxylic acid, 1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl ester, polymer with hexahydro-5-methyl-1,3-isobenzofurandione (9CI) (CA INDEX NAME)

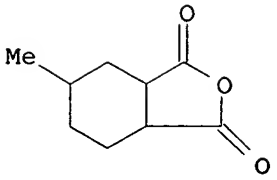
CM 1

CRN 195065-80-6
CMF C17 H26 O4



CM 2

CRN 19438-60-9
CMF C9 H12 O3

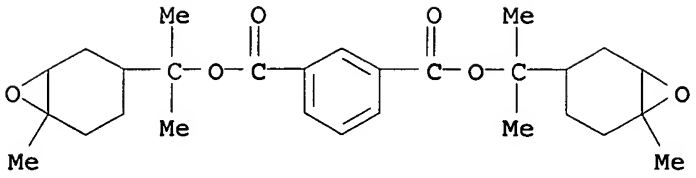


CC 37-6 (Plastics Manufacture and Processing)
Section cross-reference(s): 76
IT **195065-81-7**
(breakdown mechanism of reworkable epoxy resin thermosets and enabling disassembly of microelectronic components)
REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 22 OF 32 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2000:566232 HCAPLUS
DOCUMENT NUMBER: 133:267406
TITLE: Synthesis and characterizations of a controlled thermally degradable epoxy resin system for electronic packaging
AUTHOR(S): Li, Haiying; Wang, Lejun; Jacob, Karl; Wong, C. P.
CORPORATE SOURCE: School of Textile & Fiber Engineering, Georgia Institute of Technology, Atlanta, GA, 30332, USA
SOURCE: Polymeric Materials Science and Engineering (2000), 83, 563-565
CODEN: PMSEDG; ISSN: 0743-0515
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A new diepoxide containing tertiary ester linkage and a benzene ring was prepared and characterized with NMR and FTIR spectroscopies. This epoxy compound existed as a liquid at ambient temperature This diepoxide and a dual-epoxy system composed with this diepoxide and another diepoxide were formulated and cured with an anhydride as hardener and imidazole as catalyst. The curing properties of this diepoxide and its dual-epoxy system were studied with DSC. Thermal properties of the cured resins of this diepoxide and its dual-epoxy system were characterized with DSC, TGA, and thermal mech. anal. The thermoset of the diepoxide showed a decomposition temperature around 200° and a glass temperature around 110-157°. The coefficient of thermal expansion (CTE) of the cured diepoxide resin was 72 ppm/°C. The curing formulated dual-epoxy system showed a viscosity of 18.7 P at room temperature and the cured resin of the dual-epoxy system showed a decomposition temperature around 220° and a glass temp,. 140-157°. The CTE of the cured dual-epoxy system was 64 ppm/°C.
IT **298702-52-0P 298702-53-1P**
(preparation and characterization of)
RN 298702-52-0 HCAPLUS
CN 1,3-Benzenedicarboxylic acid, bis[1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl] ester, polymer with hexahydro-5-methyl-1,3-isobenzofurandione (9CI) (CA INDEX NAME)

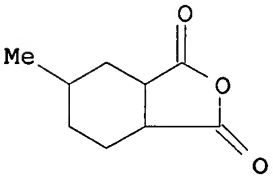
CM 1

CRN 298702-51-9
CMF C28 H38 O6



CM 2

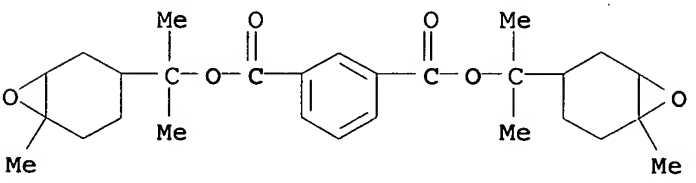
CRN 19438-60-9
CMF C9 H12 O3



RN 298702-53-1 HCAPLUS
CN 1,3-Benzenedicarboxylic acid, bis[1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl] ester, polymer with hexahydro-5-methyl-1,3-isobenzofurandione and 7-oxabicyclo[4.1.0]hept-3-ylmethyl 7-oxabicyclo[4.1.0]heptane-3-carboxylate (9CI) (CA INDEX NAME)

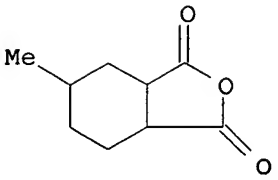
CM 1

CRN 298702-51-9
CMF C28 H38 O6



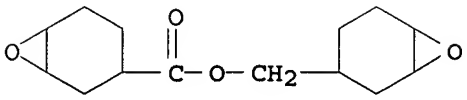
CM 2

CRN 19438-60-9
CMF C9 H12 O3



CM 3

CRN 2386-87-0
CMF C14 H20 O4



CC 37-3 (Plastics Manufacture and Processing)
Section cross-reference(s): 38
IT **298702-52-0P 298702-53-1P**
(preparation and characterization of)
REFERENCE COUNT: 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

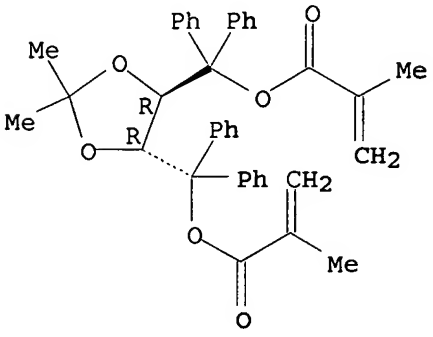
L32 ANSWER 23 OF 32 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2000:535780 HCAPLUS
DOCUMENT NUMBER: 133:223104
TITLE: Template-induced, stereoselective cyclizations in the cyclopolymerization of TADDOL-dimethacrylate
AUTHOR(S): Wulff, Gunter; Matussek, Anja; Hanf, Christian; Gladow, Stefan; Lehmann, Christian; Goddard, Richard
CORPORATE SOURCE: Institut fur Organische Chemie und Makromolekulare Chemie Heinrich-Heine-Universitat Dusseldorf, Dusseldorf, 40225, Germany
SOURCE: Angewandte Chemie, International Edition (2000), 39(13), 2275-2278
CODEN: ACIEF5; ISSN: 1433-7851
PUBLISHER: Wiley-VCH Verlag GmbH
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The stereoselectivity and the mechanism of the anionic monocyclization of (R,R)-TADDOL dimethacrylate was studied using 4 different organolithium initiators (RLi, R = CHPh2, CPh3, fluorenyl, N,N'-diphenylethylenediamine). Both diastereomers of the TADDOL-bound MMA dimer compds. were yielded.
IT **171979-20-7DP**, hydrolyzed **171979-20-7P**
(preparation and structure of TADDOL-bound and free cyclic polymethacrylate oligomers)
RN 171979-20-7 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, [[(4R,5R)-2,2-dimethyl-1,3-dioxolane-4,5-diyl]bis(diphenylmethylene)] ester, homopolymer, isotactic

(9CI) (CA INDEX NAME)

CM 1

CRN 171979-19-4
CMF C39 H38 O6

Absolute stereochemistry. Rotation (-).

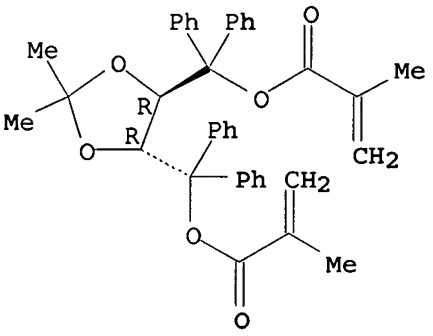


RN 171979-20-7 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, [[(4R,5R)-2,2-dimethyl-1,3-dioxolane-4,5-diyl]bis(diphenylmethylene)] ester, homopolymer, isotactic (9CI) (CA INDEX NAME)

CM 1

CRN 171979-19-4
CMF C39 H38 O6

Absolute stereochemistry. Rotation (-).



CC 35-4 (Chemistry of Synthetic High Polymers)
IT 25188-98-1P, Isotactic PMMA **171979-20-7DP**, hydrolyzed
171979-20-7P 292163-36-1P 292163-37-2P 292163-40-7P
292163-41-8P 292163-42-9P 292163-43-0P 292163-44-1P
292163-45-2P
(preparation and structure of TADDOL-bound and free cyclic polymethacrylate oligomers)
REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 24 OF 32 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2000:182104 HCAPLUS
DOCUMENT NUMBER: 132:294388
TITLE: Altering network architecture in cured thermosets: the decomposition mechanism and network breakdown of reworkable epoxies with tertiary ester links
AUTHOR(S): Chen, J. S.; Ober, C. K.; Poliks, M. D.
CORPORATE SOURCE: Department of Materials Science and Engineering, Cornell University, Ithaca, NY, 14853, USA
SOURCE: Polymeric Materials Science and Engineering (2000), 82, 357-358
CODEN: PMSEDG; ISSN: 0743-0515
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English

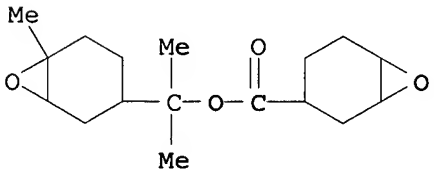
AB The breakdown mechanism of the cycloaliph. epoxy monomer and polymer network derived by the esterification of cyclohexenoic acid with α-terpineol with subsequent epoxidn. was studied. The resin cleaves in a manner that enabled reworkability in fully cured thermoset networks that contain it. The monomer breaks at its tertiary ester bond. Network decomposition due to disconnection of the monomer segments rendered the system soluble in common solvents.

IT **207505-78-0**
(decomposition mechanism and network breakdown of reworkable epoxies with tertiary ester links)

RN 207505-78-0 HCAPLUS
CN 7-Oxabicyclo[4.1.0]heptane-3-carboxylic acid, 1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 195065-80-6
CMF C17 H26 O4



CC 37-4 (Plastics Manufacture and Processing)
IT 195065-80-6 **207505-78-0**
(decomposition mechanism and network breakdown of reworkable epoxies with tertiary ester links)
REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 25 OF 32 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1999:571842 HCAPLUS
DOCUMENT NUMBER: 131:200774
TITLE: Compounds with substituted cyclic hydrocarbon moieties linked by secondary or tertiary oxycarbonyl-containing moiety for reworkable

cured thermosets
INVENTOR(S): Ober, Christopher K.; Koerner, Hilmar
PATENT ASSIGNEE(S): Cornell Research Foundation, Inc., USA
SOURCE: U.S., 21 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5948922	A	19990907	US 1997-802905	19970220
US 6197122	B1	20010306	US 1998-177363	19981023
US 5973033	A	19991026	US 1998-178557	19981026

PRIORITY APPLN. INFO.: US 1997-802905 A3 19970220

AB Title compds. containing two cyclic hydrocarbon moieties which are substituted to provide crosslinking functionality and linked to each other by secondary or tertiary oxycarbonyl-containing moiety are basis for compns. which are cured to provide cured thermosets for encapsulation and underfill for electronic components that are thermally decomposable to allow repair, replacement, recovery or recycling of operative electronic components from assemblies that are inoperative. Thus a curable composition comprising a compound prepared by reacting 3-cyclohexenecarboxylic acid chloride with (1-methyl-1-hydroxy)ethyl-3-cyclohexene, followed by epoxidizing the product with dimethyldioxirane 100, cis-1,2-cyclohexanecarboxylic anhydride 87, N,N-dimethylbenzylamine catalyst 1.5, and ethylene glycol initiator 1.5 parts was cured at 160° to give a cured thermoset, showing thermal decomposition temperature of ≤350°.

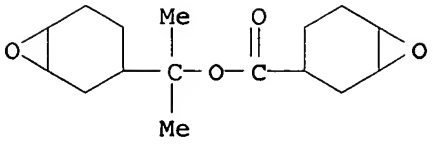
IT **240493-37-2P 240493-40-7P**
(preparation of compds. with substituted cyclic hydrocarbon moieties linked by secondary or tertiary oxycarbonyl-containing moiety for reworkable cured thermosets)

RN 240493-37-2 HCAPLUS

CN 7-Oxabicyclo[4.1.0]heptane-3-carboxylic acid, 1-methyl-1-(7-oxabicyclo[4.1.0]hept-3-yl)ethyl ester, polymer with rel-(3aR,7aS)-hexahydro-1,3-isobenzofurandione (9CI) (CA INDEX NAME)

CM 1

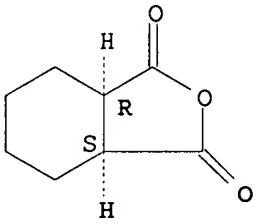
CRN 195065-78-2
CMF C16 H24 O4



CM 2

CRN 13149-00-3
CMF C8 H10 O3

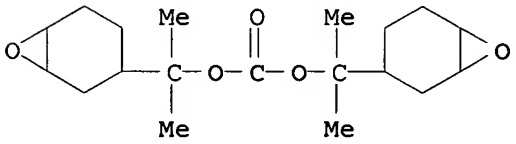
Relative stereochemistry.



RN 240493-40-7 HCAPLUS
CN 7-Oxabicyclo[4.1.0]heptane-3-methanol, α,α-dimethyl-, carbonate (2:1), polymer with rel-(3aR,7aS)-hexahydro-1,3-isobenzofurandione (9CI) (CA INDEX NAME)

CM 1

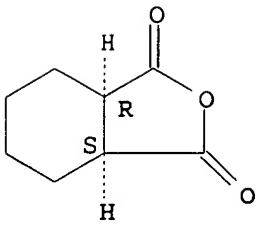
CRN 240493-33-8
CMF C19 H30 O5



CM 2

CRN 13149-00-3
CMF C8 H10 O3

Relative stereochemistry.



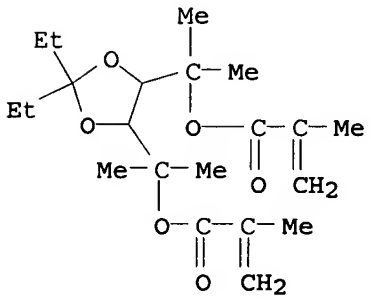
IC ICM C07D303-00
INCL 549547000
CC 37-2 (Plastics Manufacture and Processing)
Section cross-reference(s): 38, 76
IT **240493-37-2P** 240493-38-3P **240493-40-7P**
240493-41-8P 240493-42-9P 240493-43-0P 240493-44-1P
240803-80-9P
(preparation of compds. with substituted cyclic hydrocarbon moieties linked by secondary or tertiary oxycarbonyl-containing moiety for reworkable cured thermosets)
REFERENCE COUNT: 34 THERE ARE 34 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 26 OF 32 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1999:211320 HCAPLUS
DOCUMENT NUMBER: 130:352659
TITLE: Control of chirality and helicity in synthetic polymers
AUTHOR(S): Sogah, Dotsevi Y.; Zheng, Shiying
CORPORATE SOURCE: Department of Chemistry and Chemical Biology, Cornell University, Ithaca, NY, 14853-1301, USA
SOURCE: Polymer Preprints (American Chemical Society, Division of Polymer Chemistry) (1999), 40(1), 540-541
CODEN: ACPPAY; ISSN: 0032-3934
PUBLISHER: American Chemical Society, Division of Polymer Chemistry
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Novel chiral helical polymers were prepared by isospecific free radical cyclopolymn. of bis(methacrylates) containing asym. templates. Polarimetric and CD measurements suggest that the polymers assume ordered and rigid conformations in solution with very high average molar rotation and do not mutarotate with either temperature or time. A strategy for probing secondary structures of optically active synthetic polymers that involves copolymn. of a chiral and achiral monomer and measurement of chiroptical properties of as a function of copolymer composition is described. Plot of optical rotation as a function of sequence length provides insight into the contribution of the optically active segment to the backbone conformation of the polymer. The min. segment length necessary for adoption of a stable helical conformation is determined from plots of normalized rotation vs. isotactic block length.
IT **224949-29-5P 224949-31-9P 224949-33-1P**
224949-34-2P
(preparation and characterization of)
RN 224949-29-5 HCAPLUS

CN Hexitol, 1,6-dideoxy-3,4-O-(1-ethylpropylidene)-2,5-di-C-methyl-, bis(2-methyl-2-propenoate), polymer with 1-phenylethyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

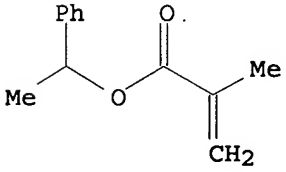
CM 1

CRN 224949-28-4
CMF C21 H34 O6



CM 2

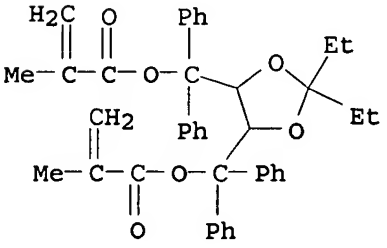
CRN 19321-42-7
CMF C12 H14 O2



RN 224949-31-9 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, (2,2-diethyl-1,3-dioxolane-4,5-diyl)bis(diphenylmethylene) ester, polymer with 1-phenylethyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

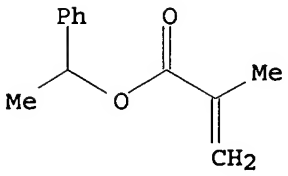
CM 1

CRN 224949-30-8
CMF C41 H42 O6



CM 2

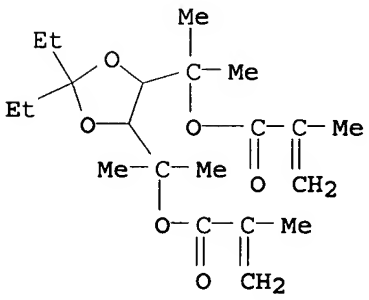
CRN 19321-42-7
CMF C12 H14 O2



RN 224949-33-1 HCAPLUS
CN Hexitol, 1,6-dideoxy-3,4-O-(1-ethylpropylidene)-2,5-di-C-methyl-, bis(2-methyl-2-propenoate), polymer with diphenylmethyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

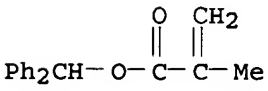
CM 1

CRN 224949-28-4
CMF C21 H34 O6



CM 2

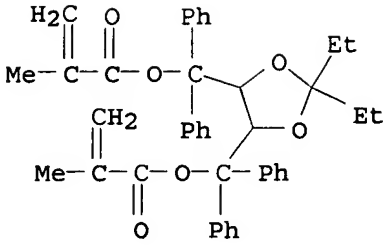
CRN 25574-72-5
CMF C17 H16 O2



RN 224949-34-2 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, (2,2-diethyl-1,3-dioxolane-4,5-diyl)bis(diphenylmethylene) ester, polymer with diphenylmethyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

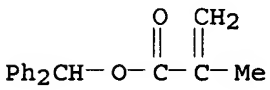
CM 1

CRN 224949-30-8
CMF C41 H42 O6



CM 2

CRN 25574-72-5
CMF C17 H16 O2



CC 35-4 (Chemistry of Synthetic High Polymers)
IT 224949-27-3P **224949-29-5P 224949-31-9P**
224949-32-0P **224949-33-1P 224949-34-2P**
(preparation and characterization of)
REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 27 OF 32 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1999:7955 HCAPLUS
DOCUMENT NUMBER: 130:66889
TITLE: Halogenated acrylates and polymers derived therefrom
INVENTOR(S): Moore, George G. I.; McCormick, Fred B.; Chattoraj, Mita; Cross, Elisa M.; Liu, Junkang Jacob; Roberts, Ralph R.; Schulz, Jay F.
PATENT ASSIGNEE(S): Minnesota Mining and Manufacturing Company, USA
SOURCE: PCT Int. Appl., 73 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9856749	A1	19981217	WO 1997-US17437	19970929

W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI,

SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, AM, AZ,
BY, KG, KZ, MD, RU, TJ, TM
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FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF,
CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG

US 6005137	A	19991221	US 1997-872235	1997 0610
AU 9747392	A1	19981230	AU 1997-47392	1997 0929
EP 1009729	A1	20000621	EP 1997-909884	1997 0929
EP 1009729	B1	20050119		
R: DE, FR, GB, IT				
CN 1259932	A	20000712	CN 1997-182296	1997 0929
CN 1125030	B	20031022		
JP 2002514259	T2	20020514	JP 1999-502352	1997 0929
US 6313245	B1	20011106	US 1999-379156	1999 0823
US 6288266	B1	20010911	US 1999-382300	1999 0824
US 2001037028	A1	20011101	US 2001-846739	2001 0501
US 6362379	B2	20020326		
PRIORITY APPLN. INFO.:			US 1997-872235 A	1997 0610
			WO 1997-US17437 W	1997 0929
			US 1999-379156 A3	1999 0823

OTHER SOURCE(S): MARPAT 130:66889

AB Acrylates having a high degree of halogenation, as well as polymers that include one or more mer units derived from such acrylates provide materials having tailorable optical and phys. properties. The polymers find utility particularly in optical devices including optical waveguides and interconnecting devices.

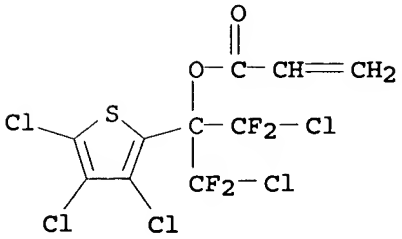
IT **217825-41-7P 217825-43-9P**
(halogenated acrylates and polymers derived therefrom)

RN 217825-41-7 HCAPLUS

CN 2-Propenoic acid, 2-chloro-1-(chlorodifluoromethyl)-2,2-difluoro-1-(3,4,5-trichloro-2-thienyl)ethyl ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

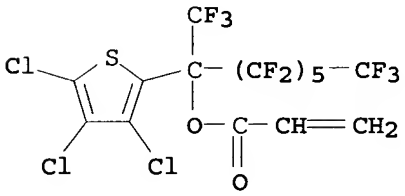
CRN 217825-40-6
CMF C10 H3 Cl5 F4 O2 S



RN 217825-43-9 HCAPLUS
CN 2-Propenoic acid, 2,2,3,3,4,4,5,5,6,6,7,7,7-tridecafluoro-1-(3,4,5-trichloro-2-thienyl)-1-(trifluoromethyl)heptyl ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 217825-42-8
CMF C15 H3 Cl3 F16 O2 S



IC ICM C07C069-653
ICS C07D213-64; C07D213-66; C07D213-68; C07D213-70; C08F020-22; C08F020-24; C07C041-22; C07C049-167; C07C049-175
CC 35-2 (Chemistry of Synthetic High Polymers)
IT 30943-42-1P 55130-25-1P 71195-86-3P 217825-09-7P
217825-10-0P 217825-11-1P 217825-12-2P 217825-14-4P
217825-15-5P 217825-17-7P 217825-19-9P 217825-21-3P
217825-23-5P 217825-24-6P 217825-26-8P 217825-28-0P
217825-30-4P 217825-32-6P 217825-34-8P 217825-35-9P
217825-37-1P 217825-39-3P **217825-41-7P**
217825-43-9P 217825-45-1P 217825-46-2P 217825-48-4P
217825-50-8P 217825-51-9P 217825-53-1P 217825-54-2P
217825-56-4P 217825-57-5P 217825-59-7P 217825-61-1P
217825-62-2P 217825-64-4P 217825-66-6P 217825-68-8P
217825-70-2P 217825-71-3P 217825-73-5P 217825-75-7P
217825-80-4P 217825-81-5P 217825-82-6P 217825-83-7P
217825-97-3P 217960-28-6P 217960-30-0P 217960-33-3P
217960-36-6P 217960-40-2P 217960-43-5P 217960-46-8P
217960-49-1P 217960-52-6P
(halogenated acrylates and polymers derived therefrom)
REFERENCE COUNT: 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 28 OF 32 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1998:398800 HCAPLUS
DOCUMENT NUMBER: 129:5113
TITLE: Reworkable Epoxies: Thermosets with Thermally Cleavable Groups for Controlled Network Breakdown
AUTHOR(S): Yang, Shu; Chen, Jir-Shyr; Koerner, Hilmar; Breiner, Thomas; Ober, Christopher K.; Poliks, Mark D.
CORPORATE SOURCE: Department of Materials Science and Engineering Bard Hall, Cornell University, Ithaca, NY, 14853-1501, USA
SOURCE: Chemistry of Materials (1998), 10(6), 1475-1482
CODEN: CMATEX; ISSN: 0897-4756
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English

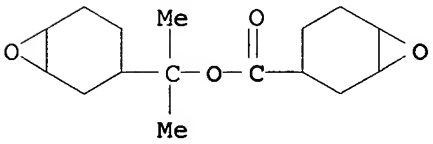
AB A series of epoxies with primary, secondary, and tertiary ester linkages were synthesized. Those networks which have tertiary esters break down at much lower temps. (~220 γC) than those with primary or secondary esters. The thermosets cured from these epoxides have the advantage of being thermally decomposable at relatively modest temps. without introduction of solvent or catalyst into the system. The concentration of weak linkages in the network greatly affects their decomposition behavior. The cured thermosets with tertiary esters retain the advantage of the mech. behavior of conventional primary ester thermosets at room temperature while having reduced mech. properties at elevated temps., thereby offering the possibility of easier thermoset removal.

IT **207505-77-9P 207505-78-0P 207505-79-1P**
(preparation of reworkable epoxy thermosets with thermally cleavable ester groups for controlled network breakdown)

RN 207505-77-9 HCAPLUS
CN 7-Oxabicyclo[4.1.0]heptane-3-carboxylic acid, 1-methyl-1-(7-oxabicyclo[4.1.0]hept-3-yl)ethyl ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

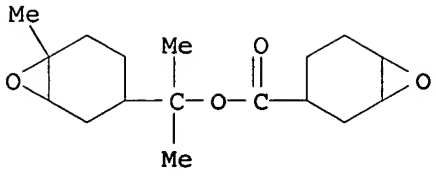
CRN 195065-78-2
CMF C16 H24 O4



RN 207505-78-0 HCAPLUS
CN 7-Oxabicyclo[4.1.0]heptane-3-carboxylic acid, 1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

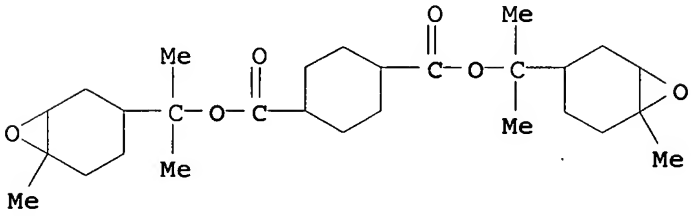
CRN 195065-80-6
CMF C17 H26 O4



RN 207505-79-1 HCAPLUS
CN 1,4-Cyclohexanedicarboxylic acid, bis[1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl] ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 207505-75-7
CMF C28 H44 O6



CC 37-3 (Plastics Manufacture and Processing)
IT 195065-76-0P 195065-78-2P 195065-80-6P 207505-75-7P
207505-76-8P **207505-77-9P 207505-78-0P**
207505-79-1P
(preparation of reworkable epoxy thermosets with thermally cleavable ester groups for controlled network breakdown)
REFERENCE COUNT: 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 29 OF 32 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1997:730905 HCAPLUS
DOCUMENT NUMBER: 127:359171
TITLE: Highly isotactic optically active methacrylate polymers by free radical cyclopolymerization
AUTHOR(S): Zheng, Shiying; Sogah, Dotsevi Y.
CORPORATE SOURCE: Dep. Chem., Baker Lab., Cornell Univ., Ithaca, NY, 14853, USA
SOURCE: Tetrahedron (1997), 53(45), 15469-15485
CODEN: TETRAB; ISSN: 0040-4020
PUBLISHER: Elsevier
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Isospecific free radical cyclopolymn. of tartrate-based monomers gives polymers with high optical rotations. The monomers were prepared from the corresponding diols by reaction with methacryloyl chloride in presence of N-methylpyrrolidone or N-butyllithium. Cyclization polymerization was performed in toluene at 60° with AIBN as initiator. The triad tacticity distribution and isotacticity of the polymers were determined by 1H NMR methods. CD and

polarimetric measurements suggest the polymers are rigid and ordered; the polymers show higher optical rotation than that of corresponding monomers. The thermal decomposition temperature of the products is 296-427°. The high resistance to solvolysis suggests potential applications of the polymers in chiral chromatog.

IT **171979-20-7P**, (-)-trans-4,5-Bis(methacryloyloxy)diphenylmethyl-2,2-dimethyl-1,3-dioxacyclopentane homopolymer
198691-48-4P, (-)-trans-4,5-Bis(methacryloyloxy)dimethylmethyl-2,2-diethyl-1,3-dioxacyclopentane homopolymer
198691-49-5P, (-)-trans-4,5-Bis(methacryloyloxy)diphenylmethyl-2,2-diethyl-1,3-dioxacyclopentane homopolymer
(highly isotactic optically active poly(tartrate methacrylate)s prepared by free radical cyclopolymn.)

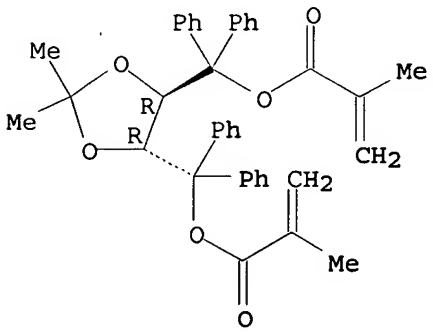
RN 171979-20-7 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, [[(4R,5R)-2,2-dimethyl-1,3-dioxolane-4,5-diyl]bis(diphenylmethylene)] ester, homopolymer, isotactic (9CI) (CA INDEX NAME)

CM 1

CRN 171979-19-4
CMF C39 H38 O6

Absolute stereochemistry. Rotation (-).



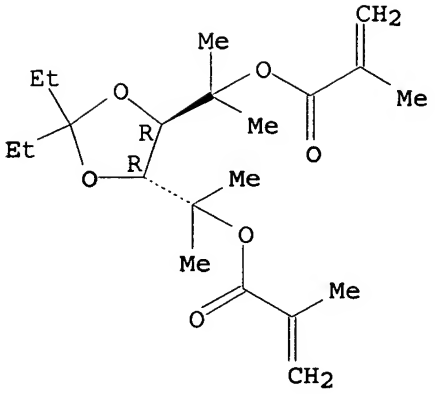
RN 198691-48-4 HCAPLUS

CN L-threo-Hexitol, 1,6-dideoxy-3,4-O-(1-ethylpropylidene)-2,5-di-C-methyl-, bis(2-methyl-2-propenoate), homopolymer, isotactic (9CI) (CA INDEX NAME)

CM 1

CRN 198691-43-9
CMF C21 H34 O6

Absolute stereochemistry. Rotation (-).

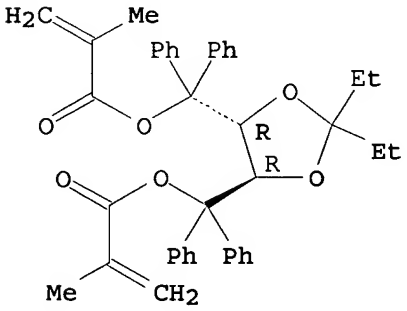


RN 198691-49-5 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, (2,2-diethyl-1,3-dioxolane-4,5-diyl)bis(diphenylmethylene) ester, (2R-trans)-, homopolymer, isotactic (9CI) (CA INDEX NAME)

CM 1

CRN 198691-44-0
CMF C41 H42 O6

Absolute stereochemistry. Rotation (-).



CC 35-4 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 36
IT **171979-20-7P**, (-)-trans-4,5-Bis(methacryloyloxy)diphenylmethyl-2,2-dimethyl-1,3-dioxacyclopentane homopolymer
198691-48-4P, (-)-trans-4,5-Bis(methacryloyloxy)dimethylmethyl-2,2-diethyl-1,3-dioxacyclopentane homopolymer
198691-49-5P, (-)-trans-4,5-Bis(methacryloyloxy)diphenylmethyl-2,2-diethyl-1,3-dioxacyclopentane homopolymer 198691-51-9P, (-)-trans-2,3-Bis(methacryloyloxy)dimethylmethyl-1,4-dioxaspiro[4,4]nonane homopolymer
(highly isotactic optically active poly(tartrate methacrylate)s prepared by free radical cyclopolymn.)
REFERENCE COUNT: 77 THERE ARE 77 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 30 OF 32 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1997:579415 HCAPLUS

DOCUMENT NUMBER: 127:221339
TITLE: Design and characterization of a new reworkable epoxy using solvent free, thermally induced network breakdown
AUTHOR(S): Yang, Shu; Chen, Jir-Shyr; Korner, Hilmar; Breiner, Thomas; Ober, Christopher K.; Poliks, Mark D.
CORPORATE SOURCE: Department of Materials Science and Engineering, Cornell University, Ithaca, NY, 14853-1501, USA
SOURCE: Polymer Preprints (American Chemical Society, Division of Polymer Chemistry) (1997), 38(2), 440-441
CODEN: ACPPAY; ISSN: 0032-3934
PUBLISHER: American Chemical Society, Division of Polymer Chemistry
DOCUMENT TYPE: Journal
LANGUAGE: English

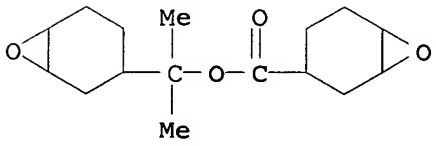
AB Epoxy resins have been widely used in many applications, but the very robustness of the epoxy network after curing may be a marked disadvantage in some cases. To achieve the feature of rework, or controlled network breakdown, a series of new cycloaliph. epoxies were synthesized which have either secondary or tertiary ester bonds between crosslink sites. These ester bonds can be cleaved if heated to a specific temperature, chosen to be above the processing and cure temperature Thermal anal. data shows that the anhydride-cured epoxies with tertiary ester bonds can decompose at .apprx.220°, while those with primary ester links decompose at .apprx.340° at a heating rate of 10°/min. Dynamic mech. anal. revealed that these new thermosets retain a modulus comparable to that of the crosslinked com. epoxy ERL 4221.

IT **195065-79-3P 195065-81-7P**
(design and characterization of reworkable epoxy resins using solvent-free thermally induced network breakdown)

RN 195065-79-3 HCAPLUS
CN 7-Oxabicyclo[4.1.0]heptane-3-carboxylic acid, 1-methyl-1-(7-oxabicyclo[4.1.0]hept-3-yl)ethyl ester, polymer with hexahydro-5-methyl-1,3-isobenzofurandione (9CI) (CA INDEX NAME)

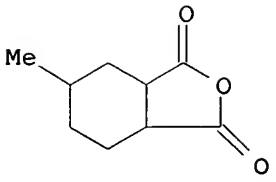
CM 1

CRN 195065-78-2
CMF C16 H24 O4



CM 2

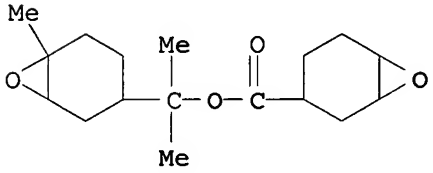
CRN 19438-60-9
CMF C9 H12 O3



RN 195065-81-7 HCAPLUS
CN 7-Oxabicyclo[4.1.0]heptane-3-carboxylic acid, 1-methyl-1-(6-methyl-7-oxabicyclo[4.1.0]hept-3-yl)ethyl ester, polymer with hexahydro-5-methyl-1,3-isobenzofurandione (9CI) (CA INDEX NAME)

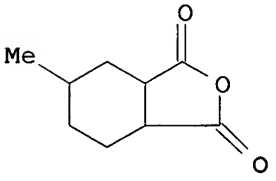
CM 1

CRN 195065-80-6
CMF C17 H26 O4



CM 2

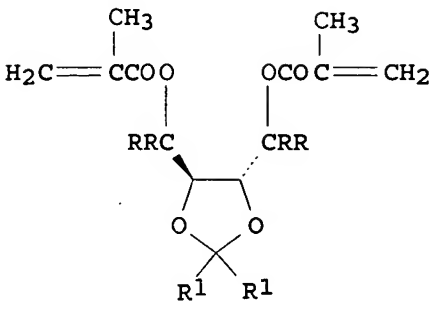
CRN 19438-60-9
CMF C9 H12 O3



CC 37-3 (Plastics Manufacture and Processing)
IT 195065-77-1P **195065-79-3P 195065-81-7P**
(design and characterization of reworkable epoxy resins using solvent-free thermally induced network breakdown)

L32 ANSWER 31 OF 32 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1997:224129 HCAPLUS
DOCUMENT NUMBER: 126:238730
TITLE: Stereocontrol of vinyl polymers via cyclopolymerization
AUTHOR(S): Zheng, Shiying; Sogah, Dotsevi Y.
CORPORATE SOURCE: Dep. Chem., Cornell Univ., Ithaca, NY, 14853, USA
SOURCE: Polymer Preprints (American Chemical Society, Division of Polymer Chemistry) (1997), 38(1), 60-61
CODEN: ACPPAY; ISSN: 0032-3934

PUBLISHER: American Chemical Society, Division of Polymer Chemistry
DOCUMENT TYPE: Journal
LANGUAGE: English
GI



I

AB Complete cyclopolymn. of monomers I (R = H, Me, Ph; R' = Me, Et, -(CH2)4-) by group transfer polymerization (GTP) and free radical polymerization

The isotacticity content of the polymers increased with the bulkiness of the monomer. The polymers with high isotacticity can assume helical conformation. The isotacticity increased with decreasing temperature under GTP conditions and was enthalpically controlled. Tacticity and optical rotation data are present. GTP and free radical polymerization can lead to enhanced macrocyclization and high meso placements to give stereoregular polymers by judicious design of monomers.

IT **171979-20-7P 188527-38-0P 188527-40-4P 188527-46-0P**

(isotacticity content and chiroptical properties of vinyl polymers in relation to cyclopolymn. and monomer)

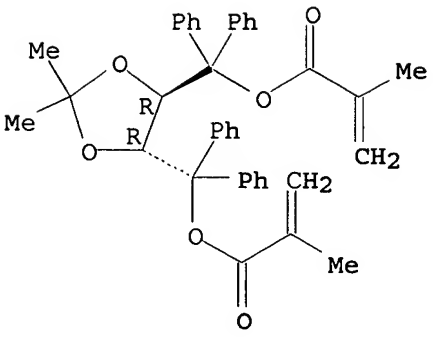
RN 171979-20-7 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, [[(4R,5R)-2,2-dimethyl-1,3-dioxolane-4,5-diyl]bis(diphenylmethylene)] ester, homopolymer, isotactic (9CI) (CA INDEX NAME)

CM 1

CRN 171979-19-4
CMF C39 H38 O6

Absolute stereochemistry. Rotation (-).

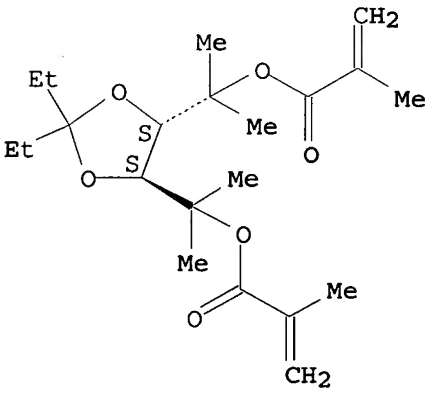


RN 188527-38-0 HCAPLUS
CN threo-Hexitol, 1,6-dideoxy-3,4-O-(1-ethylpropylidene)-2,5-di-C-methyl-, bis(2-methyl-2-propenoate), homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 188527-37-9
CMF C21 H34 O6

Relative stereochemistry.

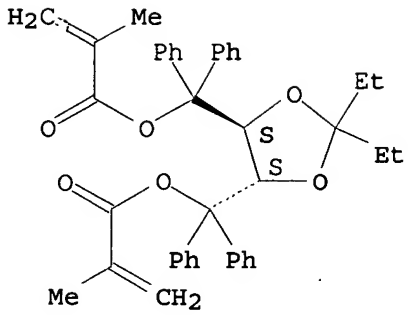


RN 188527-40-4 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, (2,2-diethyl-1,3-dioxolane-4,5-diyl)bis(diphenylmethylene) ester, trans-, homopolymer, isotactic (9CI) (CA INDEX NAME)

CM 1

CRN 188527-39-1
CMF C41 H42 O6

Relative stereochemistry.

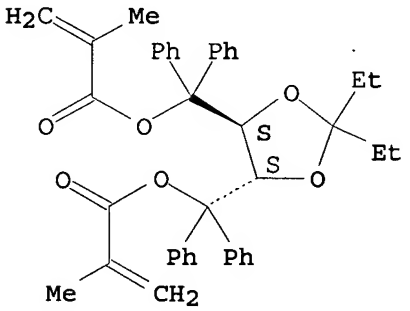


RN 188527-46-0 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, (2,2-diethyl-1,3-dioxolane-4,5-diyl)bis(diphenylmethylene) ester, trans-, polymer with 1-phenylethyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

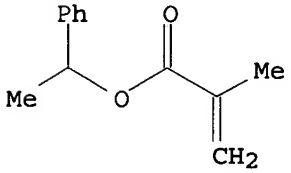
CRN 188527-39-1
CMF C41 H42 O6

Relative stereochemistry.



CM 2

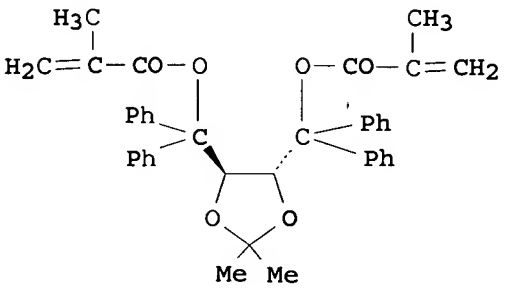
CRN 19321-42-7
CMF C12 H14 O2



CC 35-4 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 36
IT **171979-20-7P** 188527-36-8P **188527-38-0P**
188527-40-4P 188527-42-6P 188527-44-8P 188527-45-9P
188527-46-0P
(isotacticity content and chiroptical properties of vinyl

polymers in relation to cyclopolymn. and monomer)

L32 ANSWER 32 OF 32 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1995:926791 HCAPLUS
DOCUMENT NUMBER: 124:30476
TITLE: Cyclopolymerization of Optically Active (-)-trans-4,5-Bis((methacryloyloxy)diphenylmethyl)-2,2-dimethyl-1,3-dioxacyclopentane through Radical and Anionic Mechanisms Gives Highly Isotactic Polymers
AUTHOR(S): Nakano, Tamaki; Okamoto, Yoshio; Sogah, Dotsevi Y.; Zheng, Shiying
CORPORATE SOURCE: School of Engineering, Nagoya University, Nagoya, 464-01, Japan
SOURCE: Macromolecules (1995), 28(25), 8705-6
CODEN: MAMOBX; ISSN: 0024-9297
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
GI



I

AB The title compound I ([α]25365 -430°, [α]25D 134°) was synthesized from (-)-trans-4,5-bis(hydroxydiphenylmethyl)-2,2-dimethyl-1,3-dioxacyclopentane and methacryloyl chloride, and polymerized through free radical and anionic mechanisms. The polymers were soluble and showed no clear pendent vinyl signals in 1H-NMR anal., indicating that polymerization took place exclusively via cyclization. The polymer obtained by radical polymerization in toluene at 60° had a triad tacticity distribution of mm/mr/rr = 84/10/6 and was levorotatory ([α]25365 715°, [α]25D 194°); the one obtained by anionic polymerization in THF at 78° using 9-fluorenyllithium was almost perfectly isotactic (mm > 99%) and showed higher levorotation ([α]25365 841°, [α]25D 222°). The polymers may have a rigid helical conformation as assumed on the basis of the chiroptical properties and structural analogy of the polymers with poly(triphenylmethyl methacrylate) which is known to have a helical structure.

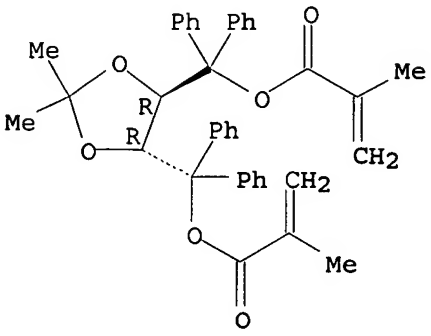
IT **171979-20-7P**
(cyclopolymn. of optically active bis((methacryloyloxy)diphenyl methyl)dimethyldioxacyclopentane via radical and anionic mechanisms for high isotacticity)

RN 171979-20-7 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, [[(4R,5R)-2,2-dimethyl-1,3-dioxolane-4,5-diyl]bis(diphenylmethylene)] ester, homopolymer, isotactic (9CI) (CA INDEX NAME)

CM 1

CRN 171979-19-4
CMF C39 H38 O6

Absolute stereochemistry. Rotation (-).



CC 35-3 (Chemistry of Synthetic High Polymers)
IT **171979-20-7P**
(cyclopolymn. of optically active bis((methacryloyloxy)diphenyl methyl)dimethyldioxacyclopentane via radical and anionic mechanisms for high isotacticity)

Access DB# 174569

SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: Sin J. Lee Examiner #: 76060 Date: 12/15/05
Art Unit: 1752 Phone Number 30 2-1333 Serial Number: 10/765,919
Mail Box and Bldg/Room Location: 9D60 (Rem.) Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

****

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Plz. Ser. B.b

Inventors (please provide full names):

Earliest Priority Filing Date:

**For Sequence Searches Only* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.*

Plz. Search for a polymer having a repeat unit, which contains a substituent gp. of the formula (2) shown in Cl. #2.

****

STAFF USE ONLY	Type of Search		Vendors and cost where applicable	
Searcher: Lyhe	NA Sequence (#)		STN	$ 300.14
Searcher Phone #:	AA Sequence (#)		Dialog	
Searcher Location:	Structure (#)	1	Questel/Orbit	
Date Searcher Picked Up: 12/22/05	Bibliographic		Dr.Link	
Date Completed: 12/22/05	Litigation		Lexis/Nexis	
Searcher Prep & Review Time: 60.30	Fulltext		Sequence Systems	
Clerical Prep Time: 30	Patent Family		WWW/Internet	
Online Time: 60	Other		Other (specify)	

PTO-1590 (8-01)

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

Bib Data Sheet

CONFIRMATION NO. 4118

SERIAL NUMBER	FILING DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
10/765,919	01/29/2004 RULE	430	1752	0171-1058P

APPLICANTS

Jun Hatakeyama, Niigata-ken, JAPAN;

Takanobu Takeda, Niigata-ken, JAPAN;
Osamu Watanabe, Niigata-ken, JAPAN;

** CONTINUING DATA ********** None SJL

** FOREIGN APPLICATIONS **********
JAPAN 2003-021416 01/30/2003) SJL
JAPAN 2003-194033 07/09/2003)

IF REQUIRED, FOREIGN FILING LICENSE GRANTED
** 08/18/2005

Foreign Priority claimed ☑ yes ☐ no 35 USC 119 (a-d) conditions met ☑ yes ☐ no ☐ Met after Allowance Verified and Acknowledged Examiner's Signature SJL Initials	STATE OR COUNTRY JAPAN	SHEETS DRAWING 2	TOTAL CLAIMS 13	INDEPENDENT CLAIMS 4

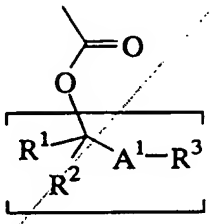
ADDRESS
02292
BIRCH STEWART KOLASCH & BIRCH
PO BOX 747
FALLS CHURCH , VA
22040-0747

TITLE
Polymer, resist composition and patterning process

FILING FEE RECEIVED	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time)

CLAIMS:

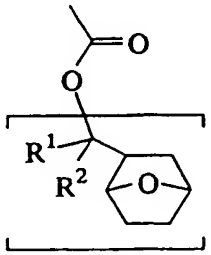
1. A polymer comprising recurring units containing silicon and recurring units having a substituent group of the general formula (1):



(1)

wherein A^1 is a divalent group selected from furandiyl, tetrahydrofurandiyl and oxanorbornanediyl, R^1 and R^2 are independently selected from straight, branched or cyclic monovalent hydrocarbon groups of 1 to 10 carbon atoms, or R^1 and R^2 taken together may form an aliphatic hydrocarbon ring with the carbon atom to which they are attached, and R^3 is hydrogen or a straight, branched or cyclic monovalent hydrocarbon group of 1 to 10 carbon atoms which may contain a hetero atom.

2. A polymer comprising recurring units containing silicon and recurring units having a substituent group of the general formula (2):

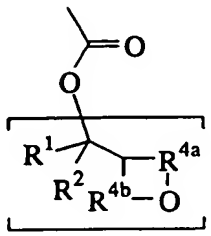


(2)

wherein R^1 and R^2 are independently selected from straight, branched or cyclic monovalent hydrocarbon groups of 1 to 10

carbon atoms, or R^1 and R^2 taken together may form an aliphatic hydrocarbon ring with the carbon atom to which they are attached.

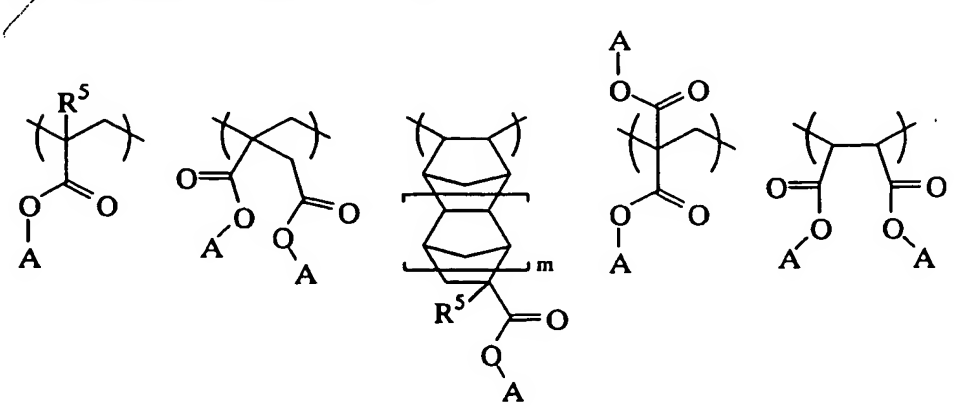
3. A polymer comprising recurring units containing silicon and recurring units having a substituent group of the general formula (3):



(3)

wherein R^1 and R^2 are independently selected from straight, branched or cyclic monovalent hydrocarbon groups of 1 to 10 carbon atoms, or R^1 and R^2 taken together may form an aliphatic hydrocarbon ring with the carbon atom to which they are attached, and R^{4a} and R^{4b} each are a single bond or an alkylene or alkenylene group of 1 to 4 carbon atoms, the total number of carbon atoms in R^{4a} and R^{4b} being from 3 to 6.

4. A polymer comprising recurring units containing silicon and recurring units of at least one type selected from the general formulae (4) to (8):



(4) (5) (6) (7) (8)

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FILE 'REGISTRY' ENTERED AT 11:00:19 ON 22 DEC 2005

=> d his

     FILE 'HCAPLUS' ENTERED AT 09:06:02 ON 22 DEC 2005
L1             1 S US20050260521/PN
                 SEL RN

     FILE 'REGISTRY' ENTERED AT 09:06:31 ON 22 DEC 2005
L2            12 S E1-E12

     FILE 'LREGISTRY' ENTERED AT 09:40:05 ON 22 DEC 2005
L3               STR
L4               STR

     FILE 'REGISTRY' ENTERED AT 09:43:41 ON 22 DEC 2005
L5               SCR 2043
L6             0 S L3 AND L4 AND L5
L7             0 S L3 AND L4
L8               SCR 1146 OR 1135
L9             2 S L3 AND L8
L10              STR L3
L11            0 S L10 AND L4
L12            2 S L10 AND L8
L13            2 S L10 AND L5 AND L8
L14          110 S L10 AND L5 AND L8 FUL
                 SAV L14 LEE919/A
L15            7 S L14 AND L2
L16           30 S L14 AND 103.61.1/RID
L17           13 S L14 AND 16.138.6/RID
L18           40 S L14 AND 16.138/RID
L19              STR L10
L20            1 S L19 AND L5 AND L8
L21          157 S L19 AND L5 AND L8 FUL
                 SAV L21 LEE919A/A
L22          167 S L14 OR L21
L23           33 S L22 AND 103.61/RID
L24           45 S L22 AND 16.138/RID

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L27           33 S L24
L28           34 S L26 OR L27
L29           97 S L25 NOT L28

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L30          110 S L22 NOT 1-20/N

     FILE 'HCAPLUS' ENTERED AT 10:43:23 ON 22 DEC 2005
L31           65 S L30
L32           32 S L31 NOT L28
L33           34 S L31 AND PHOTOG?/SC
L34            1 S L33 NOT L28


=> d que l26
L5               SCR 2043
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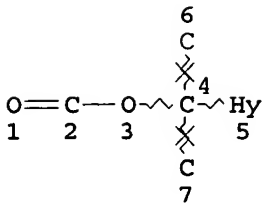
L8 SCR 1146 OR 1135
L10 STR



NODE ATTRIBUTES:
NSPEC IS RC AT 4
NSPEC IS RC AT 6
NSPEC IS RC AT 7
DEFAULT MLEVEL IS ATOM
GGCAT IS SAT AT 5
DEFAULT ECLEVEL IS LIMITED
ECOUNT IS X6 C AT 5

GRAPH ATTRIBUTES:
RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS 7

STEREO ATTRIBUTES: NONE
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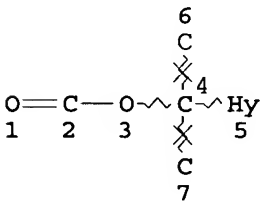
L19 STR



NODE ATTRIBUTES:
NSPEC IS RC AT 4
NSPEC IS RC AT 6
NSPEC IS RC AT 7
DEFAULT MLEVEL IS ATOM
DEFAULT ECLEVEL IS LIMITED
ECOUNT IS X6 C X1 O AT 5

GRAPH ATTRIBUTES:
RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS 7

STEREO ATTRIBUTES: NONE
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L22 167 SEA FILE=REGISTRY ABB=ON PLU=ON L14 OR L21
L23 33 SEA FILE=REGISTRY ABB=ON PLU=ON L22 AND 103.61/RID
L26 11 SEA FILE=HCAPLUS ABB=ON PLU=ON L23

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FILE 'HCAPLUS' ENTERED AT 11:00:37 ON 22 DEC 2005

=> d l26 1-11 ibib abs hitstr hitind

L26 ANSWER 1 OF 11 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2005:822667 HCAPLUS
DOCUMENT NUMBER: 143:219454
TITLE: Chemically amplified photoresists with high sensitivity, resolution, and less scums, silsesquioxane compositions therefor, and method for forming precise patterns therewith
INVENTOR(S): Hatakeyama, Jun
PATENT ASSIGNEE(S): Shin-Etsu Chemical Industry Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 102 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005221714	A2	20050818	JP 2004-28994	2004 0205

PRIORITY APPLN. INFO.: JP 2004-28994 2004 0205

GI

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

AB The compns. contain (A) organopolysiloxanes prepared by hydrolytic condensation of silane monomers R1SiX3 (R1 = organic group having acid-decomposable group; X = halo, OH, C1-10 alkoxy or acyl) and optionally other silane monomers R0SiX3 (R0 = organic group for tight adhesion; X = same as above) and (B) polymers having repeating units [R2C(CO2R5)CH2] [R2 = H, Me, F, CF3, CN, CH2CO2R3, CH2OR4; R3 = C1-4 linear or branched alkyl; R4 = H, C1-4 linear or branched alkyl or acyl; R5 = R6R7CCH2SiR8R9R10, R11C(CH2SiR12R13R14)2, C(CH2SiR15R16R17)3, Q1, Q2; R6, R7, R11 = H, C1-10 linear, branched, or cyclic alkyl; R8-R10, R12-R17 = C1-10 linear, branched, or cyclic alkyl, C6-10 aryl, trialkylsilyl, Si-containing group bonded with Si in the formula by siloxane or silalkylene linkage; R28-R30 = C1-20 linear, branched, or cyclic alkyl; R18, R19, R22, R23, R26, R27, R31, R32, R35, R36, R39-R41 = H, C1-20 linear, branched, or cyclic alkyl; R20, R21, R24, R25, R33, R34, R37, R38 = H, C1-20 linear, branched, or cyclic alkyl, fluorinated C1-20 alkyl, C6-20 aryl; p, q, r, s = 0-10; $1 \leq p + q + s \leq 20$]. Also claimed are compns. containing A and (C) copolymers of silyl-branched vinyl repeating units and other repeating units having groups whose alkaline solubility can be increased by acids (both Markush given). Alternatively, the compns. contain (R1SiOx) (R1 = same as above; x = 1.0-1.5) instead of A. Also claimed are chemical amplified photoresists containing the above compns., acid generators, organic solvents, and optionally dissoln. inhibitors. Basic compds. may be contained in the

photoresists. In the process, the photoresists are applied on substrates (e.g., semiconductor wafers equipped with photoresist underlayers), heat treated, exposed to high-energy rays or electron beams via photomasks, and developed (after further heat treatment) to give patterns. After the patterns are formed, layers under them may be etched with O plasma or with Br- or Cl-containing halogen gases.

IT **802917-23-3P 862379-21-3P**
(silsesquioxane-based chemical amplified photoresists with high sensitivity, resolution, and less scums for forming precise patterns)

RN 802917-23-3 HCAPLUS

CN Bicyclo[2.2.1]hept-5-ene-2-carboxylic acid, 1-(7-oxabicyclo[2.2.1]hept-2-yl)cyclopentyl ester, polymer with 2,5-furandione and heptacyclopentyl[(ethenyldimethylsilyl)oxy]pentacyclo[9.5.1.13,9.15,15.17,13]octasiloxane (9CI) (CA INDEX NAME)

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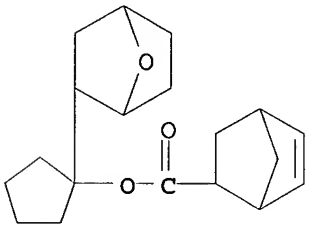
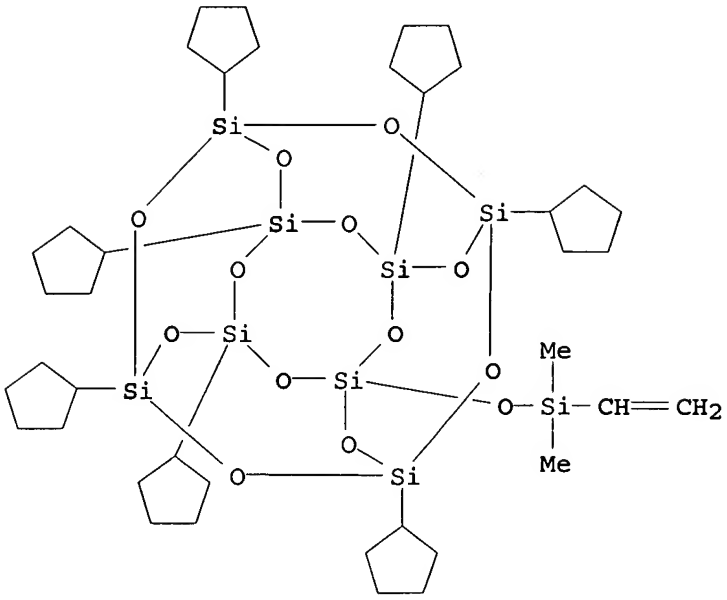
CRN 676456-74-9
CMF C19 H26 O3



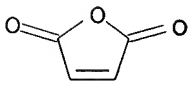
CM 2

CRN 312693-40-6
CMF C39 H72 O13 Si9



CM 3

CRN 108-31-6
CMF C4 H2 O3



RN 862379-21-3 HCAPLUS
CN Bicyclo[2.2.1]hept-5-ene-2-carboxylic acid, 1-(7-oxabicyclo[2.2.1]hept-2-yl)cyclopentyl ester, polymer with ethenylheptamethylcyclotetrasiloxane and 2,5-furandione (9CI) (CA INDEX NAME)

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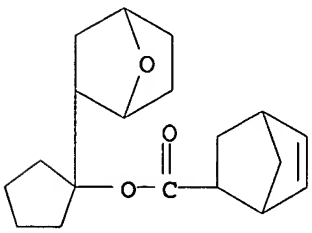
CRN 676456-74-9
CMF C19 H26 O3



CM 2

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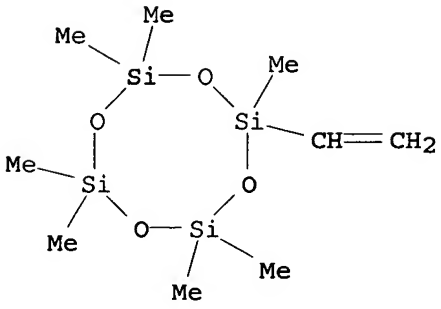
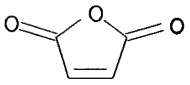


CM 3

CRN 108-31-6
CMF C4 H2 O3



IC ICM G03F007-075
ICS C08F030-08; G03F007-039; H01L021-027; C08G077-14
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 76
IT 630417-20-8P 800397-92-6P **802917-23-3P** 802986-14-7P
819837-18-8P 862379-20-2P **862379-21-3P** 862383-75-3P
862383-77-5P
(silsesquioxane-based chemical amplified photoresists with high sensitivity, resolution, and less scums for forming precise patterns)

L26 ANSWER 2 OF 11 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2005:445341 HCAPLUS
DOCUMENT NUMBER: 142:490394
TITLE: Acrylic polymers for chemically amplified positive photoresists, and method for pattern formation using them
INVENTOR(S): Hatakeyama, Jun; Harada, Yuji; Kawai, Yoshio
PATENT ASSIGNEE(S): Shin-Etsu Chemical Industry Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 56 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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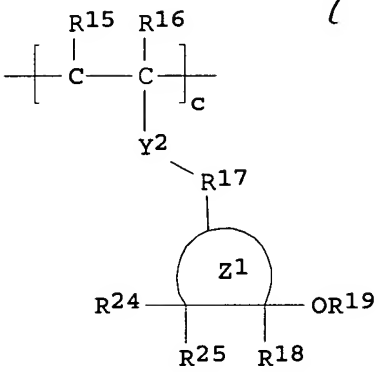
JP 2005133066 A2 20050526 JP 2004-215907 2004 0723

PRIORITY APPLN. INFO.: JP 2003-350143 A 2003 1008

GI



I

AB The polymers have repeating units of (A) [CHR2CR1[CO2CR3R4(R5R6)]]a and (B) [CHR8CR9[Y1R10R23R11CR12R13(OR14)]]b and/or I [R1 = H, Me, CH2CO2R7; R2 = H, Me, CO2R7; R3, R4 = C1-10 hydrocarbyl, R3 and R4 may link together to form an aliphatic hydrocarbon ring with connecting C; R5 = furandiyl, tetrahydrofurandiyl, and oxanorbornanediyl; R6 = H, C1-10 hydrocarbyl; R7 = H, C1-15 alkyl; R9, R16 = H, Me, CH2CO2R7; R8, R15 = H, Me, CO2R7; R10, R11, R17 = single bond, C1-4 alkylene; R12, R13 = trifluoromethyl, Me, R12 = R13 ≠ Me; R18 = F, trifluoromethyl; R14, R19 = H, acid-labile group; R23 = (O-, S-containing bridged) C4-20 cyclic alkylene; R24, R25 = H, F; Z1 = (O-, S-containing) C4-12 bridged cyclic hydrocarbon group; Y1, Y2 = O, CO2; a = 0.1-0.8; b, c = 0-0.8; (b + c) = 0.05-0.8]. The photoresists show high sensitivity and resolution, and low line edge roughness.

IT **851866-57-4P 851866-58-5P 851866-60-9P**
851866-61-0P 851866-62-1P 851866-63-2P
(acrylic polymers having specific acid-labile groups for chemical amplified pos. photoresists)

RN 851866-57-4 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, hexahydro-2-oxo-3,5-methano-2H-cyclopenta[b]furan-6-yl ester, polymer with 1-(7-oxabicyclo[2.2.1]hept-2-yl)cyclopentyl 2-methyl-2-propenoate and 5-[3,3,3-trifluoro-2-hydroxy-2-(trifluoromethyl)propyl]bicyclo[2.2.1]hept-2-yl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

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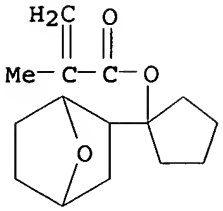
CRN 676456-72-7
CMF C15 H22 O3



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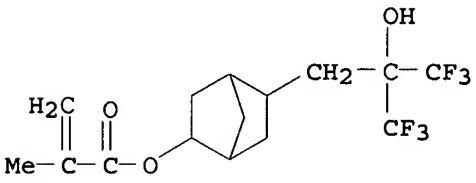

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CRN 254900-07-7
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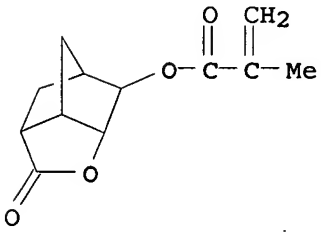

RN 851866-58-5 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 3-hydroxytricyclo[3.3.1.13,7]dec-1-yl ester, polymer with 1-(7-oxabicyclo[2.2.1]hept-2-yl)cyclopentyl 2-methyl-2-propenoate and 5-[3,3,3-trifluoro-2-hydroxy-2-(trifluoromethyl)propyl]bicyclo[2.2.1]hept-2-yl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 676456-72-7
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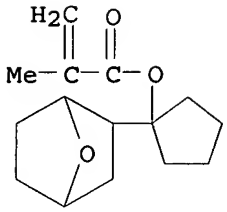

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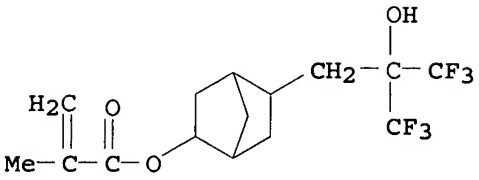

CM 3

CRN 115372-36-6
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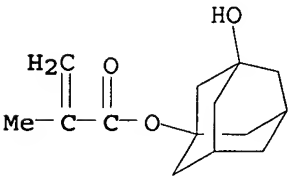
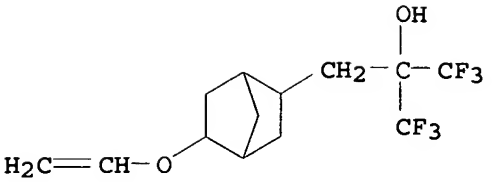


RN 851866-60-9 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 3-hydroxytricyclo[3.3.1.13,7]dec-1-yl ester, polymer with 5-(ethenyloxy)-α,α-bis(trifluoromethyl)bicyclo[2.2.1]heptane-2-ethanol and 1-(7-oxabicyclo[2.2.1]hept-2-yl)cyclopentyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

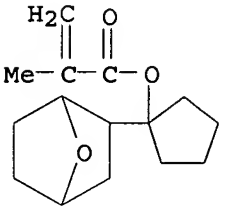
CM 1

CRN 849811-87-6
CMF C13 H16 F6 O2



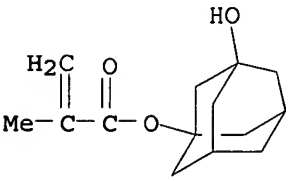
CM 2

CRN 676456-72-7
CMF C15 H22 O3



CM 3

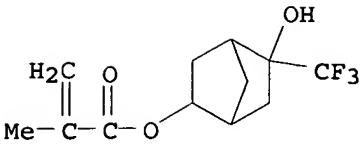
CRN 115372-36-6
CMF C14 H20 O3



RN 851866-61-0 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 3-hydroxytricyclo[3.3.1.13,7]dec-1-yl ester, polymer with 5-hydroxy-5-(trifluoromethyl)bicyclo[2.2.1]hept-2-yl 2-methyl-2-propenoate and 1-(7-oxabicyclo[2.2.1]hept-2-yl)cyclopentyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

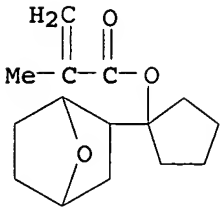
CM 1

CRN 849803-66-3
CMF C12 H15 F3 O3



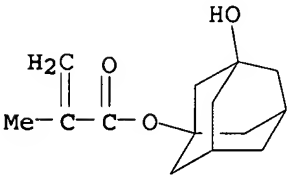
CM 2

CRN 676456-72-7
CMF C15 H22 O3



CM 3

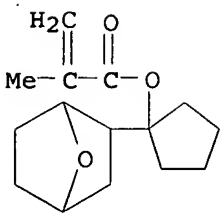
CRN 115372-36-6
CMF C14 H20 O3



RN 851866-62-1 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 2-ethyldecahydro-1,4:5,8-dimethanonaphthalen-2-yl ester, polymer with 3-hydroxytricyclo[3.3.1.13,7]dec-1-yl 2-methyl-2-propenoate, 1-(7-oxabicyclo[2.2.1]hept-2-yl)cyclopentyl 2-methyl-2-propenoate and 5-[3,3,3-trifluoro-2-hydroxy-2-(trifluoromethyl)propyl]bicyclo[2.2.1]hept-2-yl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

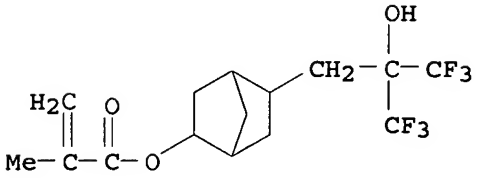
CM 1

CRN 676456-72-7
CMF C15 H22 O3



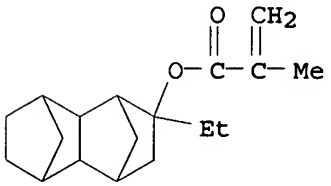
CM 2

CRN 617711-94-1
CMF C15 H18 F6 O3



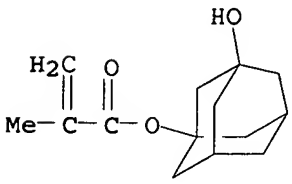
CM 3

CRN 485819-03-2
CMF C18 H26 O2



CM 4

CRN 115372-36-6
CMF C14 H20 O3

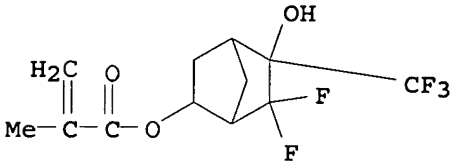


RN 851866-63-2 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 6,6-difluoro-5-hydroxy-5-

(trifluoromethyl)bicyclo[2.2.1]hept-2-yl ester, polymer with 3-hydroxytricyclo[3.3.1.13,7]dec-1-yl 2-methyl-2-propenoate and 1-(7-oxabicyclo[2.2.1]hept-2-yl)cyclopentyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

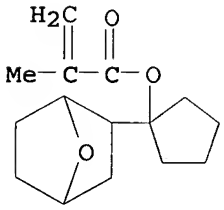
CM 1

CRN 849803-71-0
CMF C12 H13 F5 O3



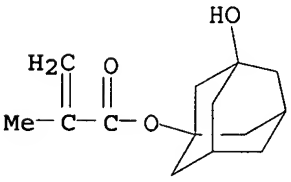
CM 2

CRN 676456-72-7
CMF C15 H22 O3



CM 3

CRN 115372-36-6
CMF C14 H20 O3



IC ICM C08F220-18
ICS G03F007-033; G03F007-039; H01L021-027
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 38
IT **851866-57-4P 851866-58-5P** 851866-59-6P
851866-60-9P 851866-61-0P 851866-62-1P
851866-63-2P

(acrylic polymers having specific acid-labile groups for chemical amplified pos. photoresists)

L26 ANSWER 3 OF 11 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2005:428605 HCAPLUS
DOCUMENT NUMBER: 142:472603
TITLE: Chemical amplification-type positive resist materials and pattern formation
INVENTOR(S): Hatakeyama, Jun; Kawai, Yoshio
PATENT ASSIGNEE(S): Shin-Etsu Chemical Industry Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 42 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005128146	A2	20050519	JP 2003-361849	2003 1022

PRIORITY APPLN. INFO.: JP 2003-361849 2003 1022

OTHER SOURCE(S): MARPAT 142:472603

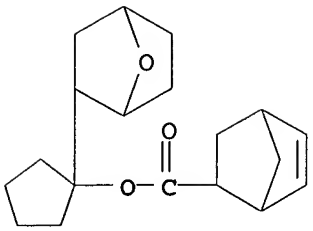
AB The resist materials comprise (A) ≥1 base polymers selected from poly(acrylic acids), their derivs., cycloolefin derivative-maleic anhydride alternating copolymers, cycloolefin derivative-maleic anhydride-acrylic acid derivative copolymers, cycloolefin derivative-maleimide alternating copolymers, cycloolefin derivative-maleimide-acrylic acid derivative copolymers, polynorbornenes, and metathesis ring-opening polymers, (B) R4[R3C(OH)R1R2]n (R1, R2 = H, F, C1-4 alkyl, fluorinated alkyl; R1 and/or R2 = F-containing group; R3 = single bond, C1-4 alkylene; R4 = C4-20 n-valent cycloalkyl; R4 may contain OH, ether, ester, CO, lactone group; n = 1-4), (C) organic solvents, and (D) acid generators. Patterns are formed by applying the materials on substrates, heating, exposing to high-energy ray or electron beam via photomasks, heating as necessary, and developing. The materials show low line-edge roughness and decreased development residues caused by swelling in development measured by QCM (quartz crystal microbalance) method.

IT **851473-87-5**
(chemical amplification-type pos. resists with low swelling in development for fine pattern formation)

RN 851473-87-5 HCAPLUS
CN Bicyclo[2.2.1]hept-5-ene-2-carboxylic acid, methyl ester, polymer with 2,5-furandione and 1-(7-oxabicyclo[2.2.1]hept-2-yl)cyclopentyl bicyclo[2.2.1]hept-5-ene-2-carboxylate (9CI) (CA INDEX NAME)

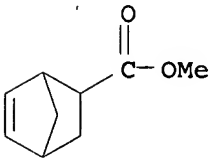
CM 1

CRN 676456-74-9
CMF C19 H26 O3



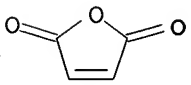
CM 2

CRN 6203-08-3
CMF C9 H12 O2



CM 3

CRN 108-31-6
CMF C4 H2 O3



IC ICM G03F007-004
ICS G03F007-039; H01L021-027
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
IT 368872-75-7 485819-05-4 485819-08-7 **851473-87-5**
(chemical amplification-type pos. resists with low swelling in development for fine pattern formation)

L26 ANSWER 4 OF 11 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2005:238524 HCAPLUS
DOCUMENT NUMBER: 142:325926
TITLE: Polymer, resist composition and patterning process
INVENTOR(S): Tachibana, Seiichiro; Nishi, Tsunehiro; Kobayashi, Tomohiro
PATENT ASSIGNEE(S): Japan
SOURCE: U.S. Pat. Appl. Publ., 46 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2005058938	A1	20050317	US 2004-936753	20040909
JP 2005105260	A2	20050421	JP 2004-259293	20040907

PRIORITY APPLN. INFO.: JP 2003-320659 A 20030912

GI

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

AB A polymer comprises recurring units of formulas I, II, III, IV (R1-3,4,7 = H, Me; R2 = acid labile group; R5,6 = H, hydroxyl; R8 = lactone structure group) and has a Mw of 1,000-50,000. A resist composition comprising the inventive polymer has a sensitivity to high-energy radiation, improved resolution and etching resistance and lends itself to lithog. micropatterning with electron beams or deep UV.

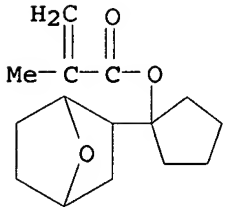
IT **848134-66-7P 848134-67-8P 848134-73-6P 848134-74-7P 848134-79-2P 848134-80-5P 848144-03-6P**
(polymer, resist composition for patterning process)

RN 848134-66-7 HCAPLUS

CN 3,5-Methano-2H-cyclopenta[b]furan-7-carboxylic acid, hexahydro-6-[(2-methyl-1-oxo-2-propenyl)oxy]-2-oxo-, methyl ester, polymer with 3-hydroxytricyclo[3.3.1.13,7]dec-1-yl 2-methyl-2-propenoate, 2-methyl-2-propenoic acid and 1-(7-oxabicyclo[2.2.1]hept-2-yl)cyclopentyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

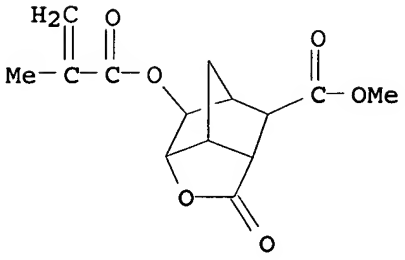
CM 1

CRN 676456-72-7
CMF C15 H22 O3



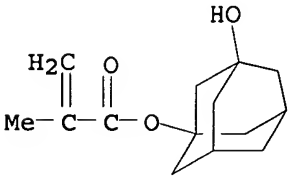
CM 2

CRN 274247-93-7
CMF C14 H16 O6



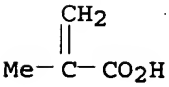
CM 3

CRN 115372-36-6
CMF C14 H20 O3



CM 4

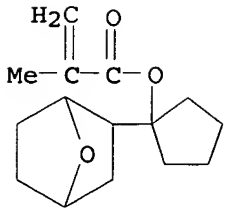
CRN 79-41-4
CMF C4 H6 O2



RN 848134-67-8 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, polymer with hexahydro-5-oxo-2,6-methanofuro[3,2-b]furan-3-yl 2-methyl-2-propenoate, 3-hydroxytricyclo[3.3.1.13,7]dec-1-yl 2-methyl-2-propenoate and 1-(7-oxabicyclo[2.2.1]hept-2-yl)cyclopentyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

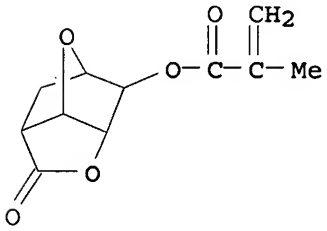
CM 1

CRN 676456-72-7
CMF C15 H22 O3



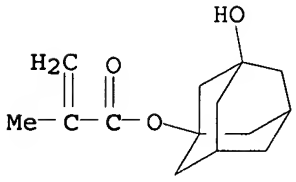
CM 2

CRN 274248-05-4
CMF C11 H12 O5



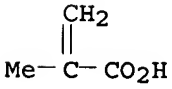
CM 3

CRN 115372-36-6
CMF C14 H20 O3



CM 4

CRN 79-41-4
CMF C4 H6 O2

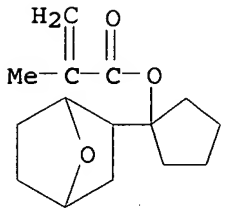


RN 848134-73-6 HCAPLUS
CN 3,5-Methano-2H-cyclopenta[b]furan-7-carboxylic acid, hexahydro-6-[(2-methyl-1-oxo-2-propenyl)oxy]-2-oxo-, methyl ester, polymer with 3-hydroxytricyclo[3.3.1.13,7]dec-1-yl 2-propenoate,

2-methyl-2-propenoic acid and 1-(7-oxabicyclo[2.2.1]hept-2-yl)cyclopentyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

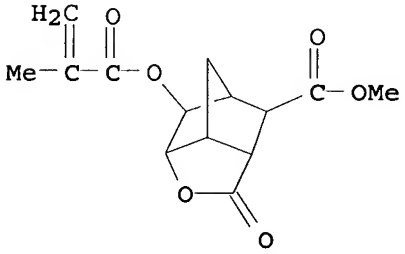
CM 1

CRN 676456-72-7
CMF C15 H22 O3



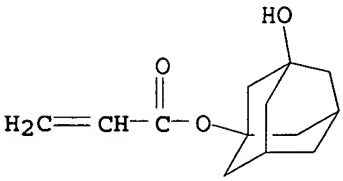
CM 2

CRN 274247-93-7
CMF C14 H16 O6



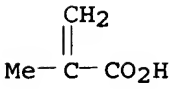
CM 3

CRN 216581-76-9
CMF C13 H18 O3



CM 4

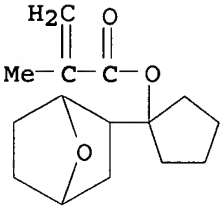
CRN 79-41-4
CMF C4 H6 O2



RN 848134-74-7 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, polymer with hexahydro-5-oxo-2,6-methanofuro[3,2-b]furan-3-yl 2-methyl-2-propenoate, 3-hydroxytricyclo[3.3.1.13,7]dec-1-yl 2-propenoate and 1-(7-oxabicyclo[2.2.1]hept-2-yl)cyclopentyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

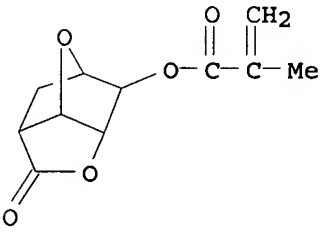
CM 1

CRN 676456-72-7
CMF C15 H22 O3



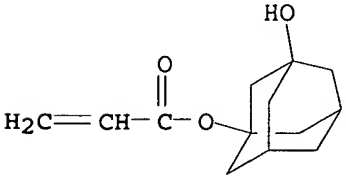
CM 2

CRN 274248-05-4
CMF C11 H12 O5



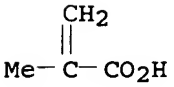
CM 3

CRN 216581-76-9
CMF C13 H18 O3



CM 4

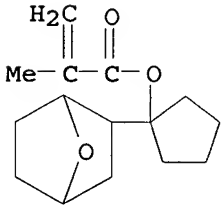
CRN 79-41-4
CMF C4 H6 O2



RN 848134-79-2 HCAPLUS
CN 3,5-Methano-2H-cyclopenta[b]furan-7-carboxylic acid, hexahydro-2-oxo-6-[(1-oxo-2-propenyl)oxy]-, methyl ester, polymer with 3-hydroxytricyclo[3.3.1.13,7]dec-1-yl 2-propenoate, 2-methyl-2-propenoic acid and 1-(7-oxabicyclo[2.2.1]hept-2-yl)cyclopentyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

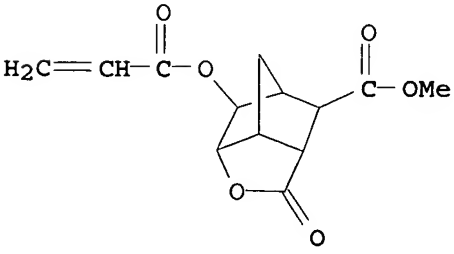
CM 1

CRN 676456-72-7
CMF C15 H22 O3



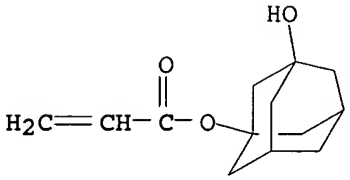
CM 2

CRN 449759-66-4
CMF C13 H14 O6



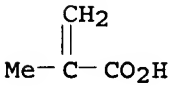
CM 3

CRN 216581-76-9
CMF C13 H18 O3



CM 4

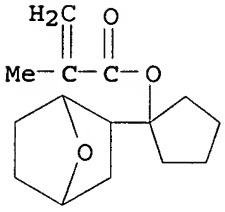
CRN 79-41-4
CMF C4 H6 O2



RN 848134-80-5 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, polymer with hexahydro-2-oxo-2,6-methanofuro[3,2-b]furan-6-yl 2-propenoate, 3-hydroxytricyclo[3.3.1.13,7]dec-1-yl 2-propenoate and 1-(7-oxabicyclo[2.2.1]hept-2-yl)cyclopentyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

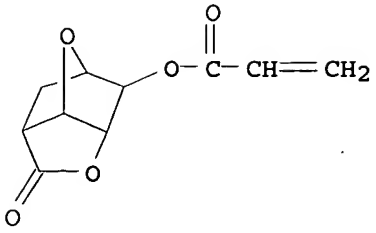
CM 1

CRN 676456-72-7
CMF C15 H22 O3



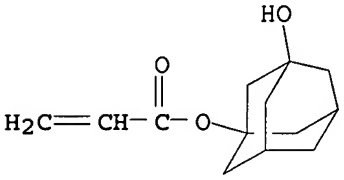
CM 2

CRN 500556-61-6
CMF C10 H10 O5



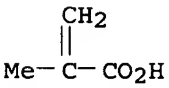
CM 3

CRN 216581-76-9
CMF C13 H18 O3



CM 4

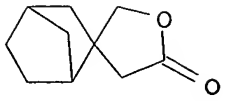
CRN 79-41-4
CMF C4 H6 O2

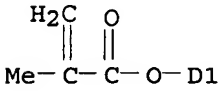


RN 848144-03-6 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, polymer with dihydro-2'-oxospiro[bicyclo[2.2.1]heptane-2,3'(2'H)-furan]-5(or 6)-yl 2-methyl-2-propenoate, dihydro-5'-oxospiro[bicyclo[2.2.1]heptane-2,3'(2'H)-furan]-5(or 6)-yl 2-methyl-2-propenoate, 3-hydroxytricyclo[3.3.1.13,7]dec-1-yl 2-methyl-2-propenoate and 1-(7-oxabicyclo[2.2.1]hept-2-yl)cyclopentyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

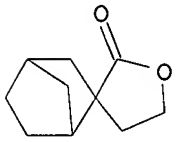
CRN 848143-98-6
CMF C14 H18 O4
CCI IDS

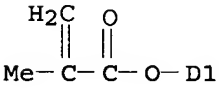




CM 2

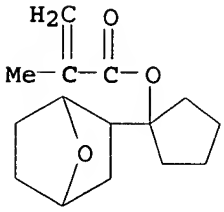
CRN 848143-97-5
CMF C14 H18 O4
CCI IDS





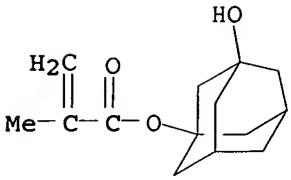
CM 3

CRN 676456-72-7
CMF C15 H22 O3



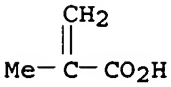
CM 4

CRN 115372-36-6
CMF C14 H20 O3



CM 5

CRN 79-41-4
CMF C4 H6 O2



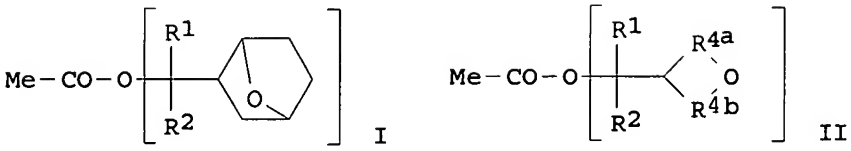
IC ICM G03C001-76
INCL 430270100
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 35, 38
IT 485819-05-4P 651043-12-8P 651043-87-7P 811440-94-5P
848134-56-5P 848134-57-6P 848134-58-7P 848134-59-8P
848134-60-1P 848134-61-2P 848134-62-3P 848134-63-4P
848134-65-6P **848134-66-7P 848134-67-8P**
848134-68-9P 848134-69-0P 848134-70-3P 848134-71-4P
848134-72-5P **848134-73-6P 848134-74-7P**
848134-75-8P 848134-76-9P 848134-77-0P 848134-78-1P
848134-79-2P 848134-80-5P 848134-81-6P
848134-82-7P 848134-83-8P 848134-84-9P 848134-85-0P
848134-86-1P 848134-87-2P 848134-88-3P 848143-99-7P
848144-00-3P 848144-01-4P 848144-02-5P **848144-03-6P**
(polymer, resist composition for patterning process)

L26 ANSWER 5 OF 11 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2005:135758 HCAPLUS
DOCUMENT NUMBER: 142:228725
TITLE: Oxygen plasma-resistant radiation-sensitive resists, their patterning, and macromolecules therefor
INVENTOR(S): Hatakeyama, Jun; Takeda, Takanobu; Watanabe, Osamu
PATENT ASSIGNEE(S): Shin-Etsu Chemical Industry Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 72 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005042085	A2	20050217	JP 2004-14354	

					2004 0122
US 2005260521	A1	20051124	US 2004-765919		2004 0129
PRIORITY APPLN. INFO.:			JP 2003-21416	A	2003 0130
			JP 2003-194033	A	2003 0709

GI



AB The macromols. have Si-bearing repeating unit and unit (i) MeCO2[CR1R2(A1R3)] [A1 = (tetrahydro)furandiyl, oxanorbornanediyl; R1, R2 = C1-10 hydrocarbyl; R3 = H, C1-10 hydrocarbyl], (ii) I (R'1, R'2 = C1-10 hydrocarbyl), and/or (iii) II [R''1, R''2 = C1-10 hydrocarbyl; C1-10 hydrocarbyl; R4a, R4b = single bond, C1-4 alk(ne)ylene within total C number of 3-60]. Pos.-working (chemical-amplified) resists containing the macromols., and their patterning with ≤300-nm high-energy or electron beams are also claimed. The resist patterns are resistant against O plasma and Cl- or Br-containing gas etchants.

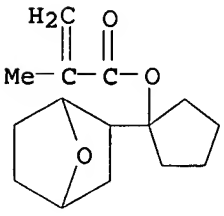
IT **843647-84-7P 843647-85-8P 843647-86-9P 843647-87-0P 843647-88-1P 843647-89-2P**
(photoresists; Si- and prescribed cyclic group-containing polymers for oxygen plasma-resistant pos. photoresists)

RN 843647-84-7 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1-(7-oxabicyclo[2.2.1]hept-2-yl)cyclopentyl ester, polymer with 4-ethenylphenol and 2-[2,2,2-trimethyl-1,1-bis(trimethylsilyl)disilanyl]ethyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

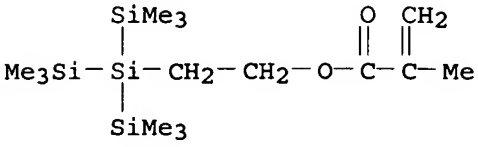
CM 1

CRN 676456-72-7
CMF C15 H22 O3



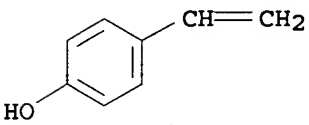
CM 2

CRN 211369-53-8
CMF C15 H36 O2 Si4



CM 3

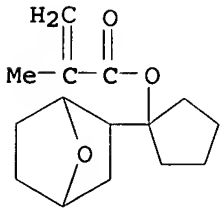
CRN 2628-17-3
CMF C8 H8 O



RN 843647-85-8 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, hexahydro-5-oxo-2,6-methanofuro[3,2-b]furan-3-yl ester, polymer with 4-ethenylphenol, 1-(7-oxabicyclo[2.2.1]hept-2-yl)cyclopentyl 2-methyl-2-propenoate and 2-[2,2,2-trimethyl-1,1-bis(trimethylsilyl)disilanyl]ethyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

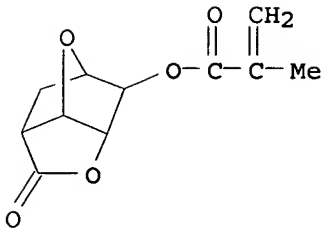
CM 1

CRN 676456-72-7
CMF C15 H22 O3



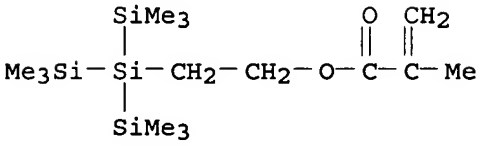
CM 2

CRN 274248-05-4
CMF C11 H12 O5



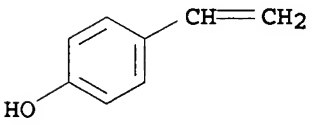
CM 3

CRN 211369-53-8
CMF C15 H36 O2 Si4



CM 4

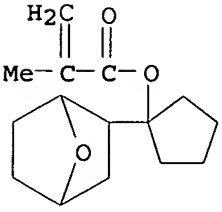
CRN 2628-17-3
CMF C8 H8 O



RN 843647-86-9 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 1-(7-oxabicyclo[2.2.1]hept-2-yl)cyclopentyl ester, polymer with ethenylheptamethylcyclotetrasiloxane and 2,5-furandione (9CI) (CA INDEX NAME)

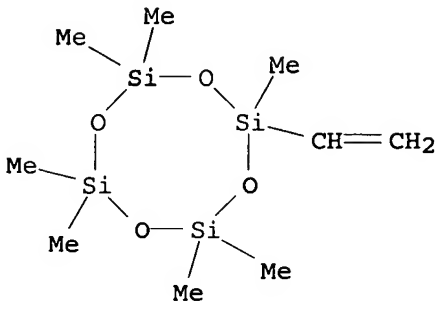
CM 1

CRN 676456-72-7
CMF C15 H22 O3



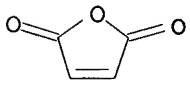
CM 2

CRN 3763-39-1
CMF C9 H24 O4 Si4



CM 3

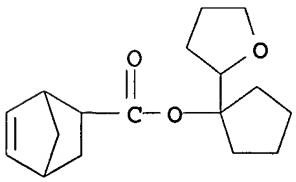
CRN 108-31-6
CMF C4 H2 O3



RN 843647-87-0 HCAPLUS
CN Bicyclo[2.2.1]hept-5-ene-2-carboxylic acid, 1-(tetrahydro-2-furanyl)cyclopentyl ester, polymer with ethenylheptamethylcyclotetrasiloxane, 2,5-furandione and 1-(7-oxabicyclo[2.2.1]hept-2-yl)cyclopentyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

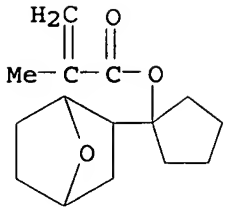
CM 1

CRN 676456-73-8
CMF C17 H24 O3



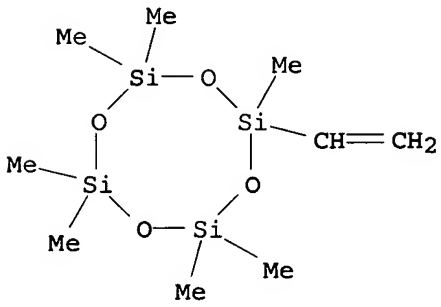
CM 2

CRN 676456-72-7
CMF C15 H22 O3



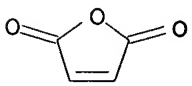
CM 3

CRN 3763-39-1
CMF C9 H24 O4 Si4



CM 4

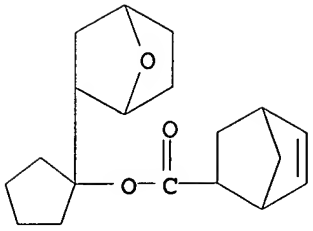
CRN 108-31-6
CMF C4 H2 O3



RN 843647-88-1 HCAPLUS
CN Bicyclo[2.2.1]hept-5-ene-2-carboxylic acid, 1-(7-oxabicyclo[2.2.1]hept-2-yl)cyclopentyl ester, polymer with 2,5-furandione and hexahydro-5-oxo-2,6-methanofuro[3,2-b]furan-3-yl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

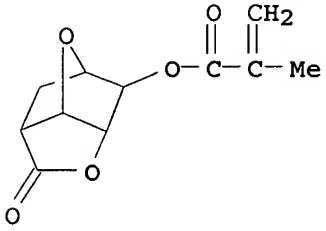
CM 1

CRN 676456-74-9
CMF C19 H26 O3



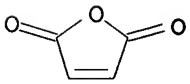
CM 2

CRN 274248-05-4
CMF C11 H12 O5



CM 3

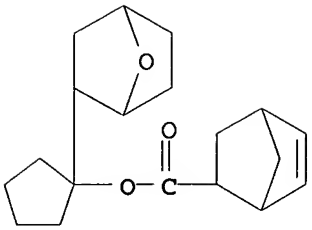
CRN 108-31-6
CMF C4 H2 O3



RN 843647-89-2 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 3-(heptacyclopentylpentacyclo[9.5.1.1 3,9.15,15.17,13]octasiloxanyl)propyl ester, polymer with hexahydro-5-oxo-2,6-methanofuro[3,2-b]furan-3-yl 2-methyl-2-propenoate and 1-(7-oxabicyclo[2.2.1]hept-2-yl)cyclopentyl bicyclo[2.2.1]hept-5-ene-2-carboxylate (9CI) (CA INDEX NAME)

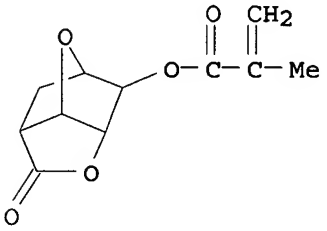
CM 1

CRN 676456-74-9
CMF C19 H26 O3



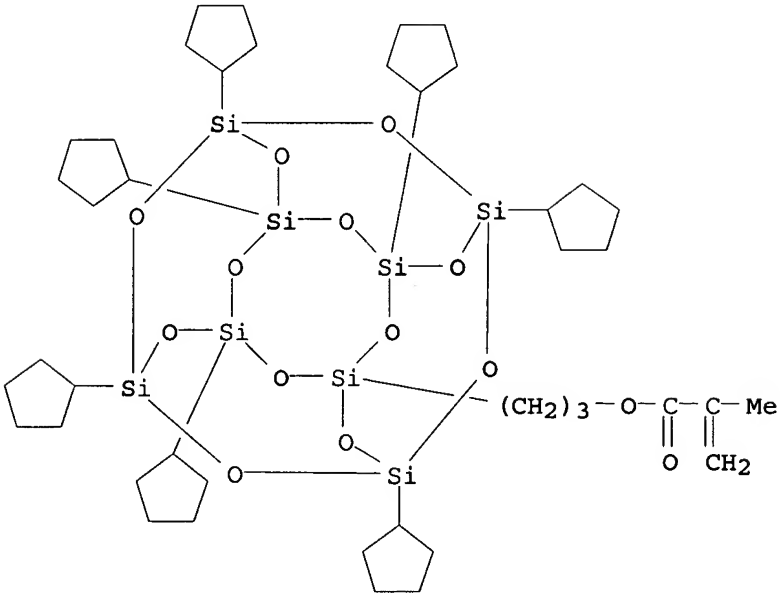
CM 2

CRN 274248-05-4
CMF C11 H12 O5



CM 3

CRN 169391-91-7
CMF C42 H74 O14 Si8



IC ICM C08F230-08
ICS G03F007-039; G03F007-075; H01L021-027

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 38

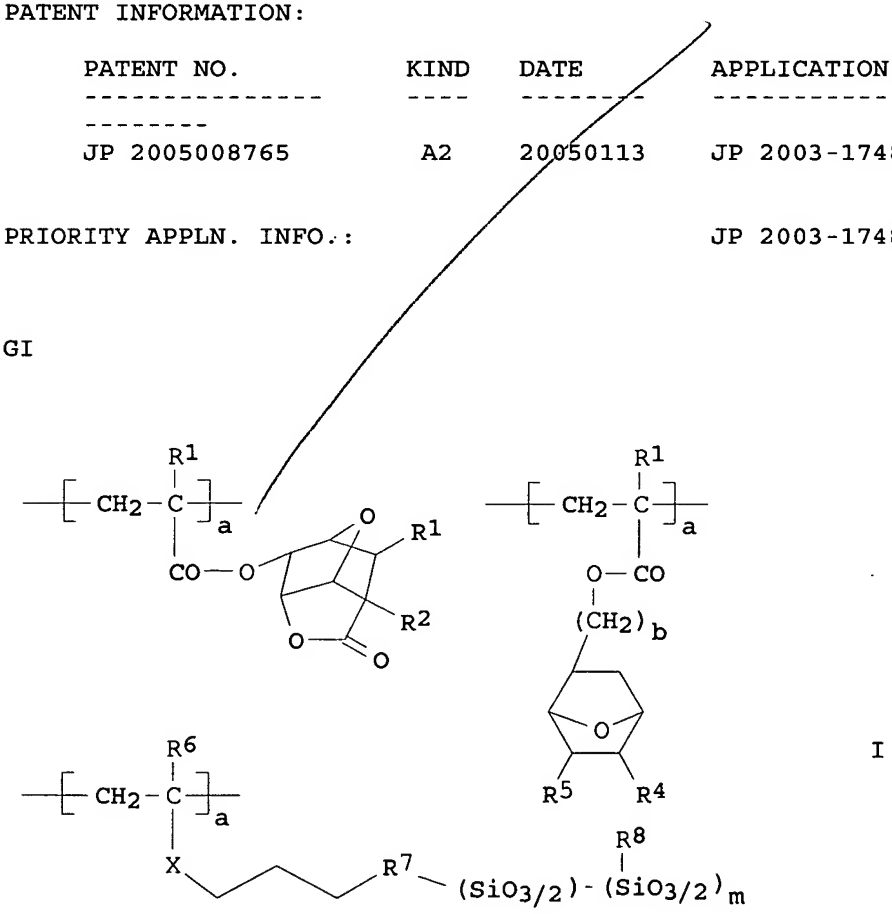
IT 843647-82-5P **843647-84-7P 843647-85-8P 843647-86-9P 843647-87-0P 843647-88-1P 843647-89-2P**
(photoresists; Si- and prescribed cyclic group-containing polymers for oxygen plasma-resistant pos. photoresists)

L26 ANSWER 6 OF 11 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2005:33606 HCAPLUS
DOCUMENT NUMBER: 142:103181
TITLE: Acrylic polymers, their chemically amplified positive photoresists with high resolution and sensitivity and suppressed line edge roughness, and photolithography using them
INVENTOR(S): Hatakeyama, Jun; Watanabe, Takeshi; Takeda, Takanobu
PATENT ASSIGNEE(S): Shin-Etsu Chemical Industry Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 58 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005008765	A2	20050113	JP 2003-174894	2003 0619

PRIORITY APPLN. INFO.: JP 2003-174894 2003 0619

GI



I

AB The acrylic polymers contain repeating units I [R1, R6 = H, Me, F,

CF3, CN, CH2CO2R12, CH2OR13; R2 = H, Me, CN; R3 = H, ester; R4, R5 = H, ester, lactone-containing group; R8 = H, C1-10 alkyl, fluorinated alkyl; R7 = single bond, (SiR9R10R11)n; R9, R10 = C1-10 alkyl; R11 = single bond, O, C1-4 alkylene; X = ester, ether; a, b ≥0; c >0; 0 < (a + b)/(a + b + c) < 0.8; 0 < c/(a + b + c) < 0.5; m = 4-40; n = 1-20; p = 0-2; R12 = C1-4 alkyl; R13 = H, C1-4 alkyl, C1-4 acyl] and other repeating units that increase alkali solubility of the polymers in the presence of acids. The photolithog. may involve etching with O plasma or halogen gases containing Cl or Br.

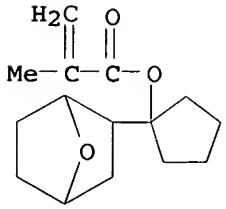
IT **819837-32-6P**
(acrylic polymers having oxonorbornane and polyhedral oligosilsesquioxane pendants for pos. photoresists with high resolution and suppressed line edge roughness)

RN 819837-32-6 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 3-(heptacyclopentylpentacyclo[9.5.1.1 3,9.15,15.17,13]octasiloxanyl)propyl ester, polymer with hexahydro-5-oxo-2,6-methanofuro[3,2-b]furan-3-yl 2-methyl-2-propenoate and 1-(7-oxabicyclo[2.2.1]hept-2-yl)cyclopentyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

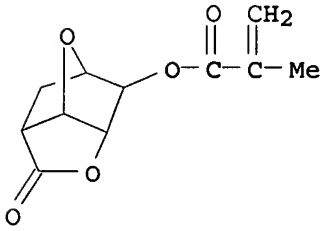
CM 1

CRN 676456-72-7
CMF C15 H22 O3



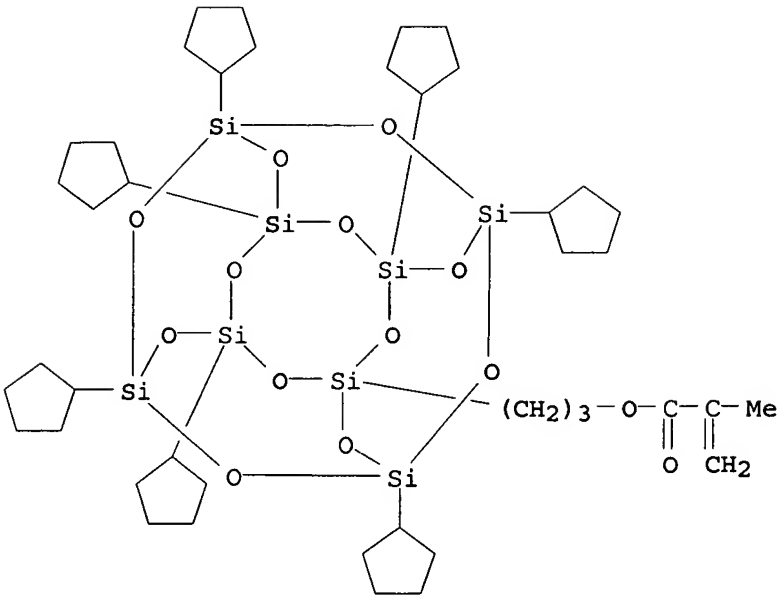
CM 2

CRN 274248-05-4
CMF C11 H12 O5



CM 3

CRN 169391-91-7
CMF C42 H74 O14 Si8



IC ICM C08F230-08
ICS G03F007-039; G03F007-075
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 38
IT 819837-18-8P 819837-20-2P 819837-22-4P 819837-23-5P
819837-25-7P 819837-27-9P 819837-29-1P 819837-31-5P
819837-32-6P 819837-34-8P
(acrylic polymers having oxonorbornane and polyhedral oligosilsesquioxane pendants for pos. photoresists with high resolution and suppressed line edge roughness)

L26 ANSWER 7 OF 11 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2004:1036753 HCAPLUS
DOCUMENT NUMBER: 142:30014
TITLE: Silicon-containing polymer, resist composition and patterning process
INVENTOR(S): Hatakeyama, Jun; Takeda, Takanobu
PATENT ASSIGNEE(S): Japan
SOURCE: U.S. Pat. Appl. Publ., 38 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004242821	A1	20041202	US 2004-853783	2004 0526
JP 2004352743	A2	20041216	JP 2003-148656	2003 0527

PRIORITY APPLN. INFO.: JP 2003-148656 A 2003

0527

AB Novel silicon-containing polymers are provided comprising recurring units having a POSS pendant and units which improve alkali solubility under the action of an acid. Resist compns. comprising the polymers are sensitive to high-energy radiation and have a high sensitivity and resolution at a wavelength of up to 300 nm and improved resistance to oxygen plasma etching.

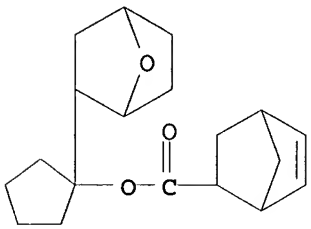
IT **802917-23-3P**
(silicon-containing polymer, resist composition and patterning process)

RN 802917-23-3 HCAPLUS

CN Bicyclo[2.2.1]hept-5-ene-2-carboxylic acid, 1-(7-oxabicyclo[2.2.1]hept-2-yl)cyclopentyl ester, polymer with 2,5-furandione and heptacyclopentyl[(ethenyldimethylsilyl)oxy]pentacyclo[9.5.1.13,9.15,15.17,13]octasiloxane (9CI) (CA INDEX NAME)

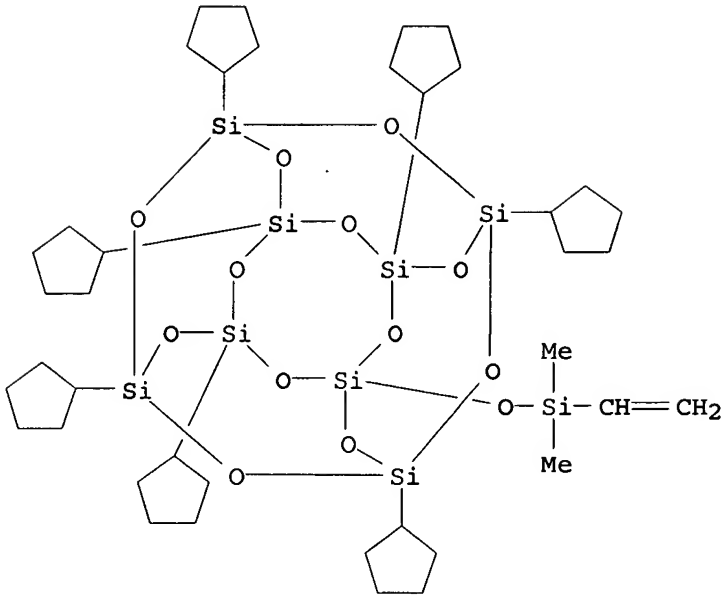
CM 1

CRN 676456-74-9
CMF C19 H26 O3



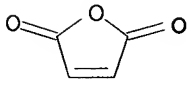
CM 2

CRN 312693-40-6
CMF C39 H72 O13 Si9



CM 3

CRN 108-31-6
CMF C4 H2 O3



IC ICM G03F007-004
ICS C08F122-04; C08F222-04
INCL 526250000; 430270100; 430322000; 430330000; 526271000; 526279000
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 38
IT 802917-18-6P 802917-19-7P 802917-20-0P 802917-21-1P
802917-22-2P **802917-23-3P** 802917-24-4P 802917-25-5P
(silicon-containing polymer, resist composition and patterning process)

L26 ANSWER 8 OF 11 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2004:261017 HCAPLUS
DOCUMENT NUMBER: 140:311986
TITLE: Ester compounds, polymers, resist compositions and patterning process
INVENTOR(S): Hasegawa, K.; Kinsho, T.; Watanabe, T.
PATENT ASSIGNEE(S): Shin-Etsu Chemical Co., Ltd., Japan
SOURCE: Eur. Pat. Appl., 48 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1403295	A2	20040331	EP 2003-256075	2003 0926
EP 1403295	A3	20040414		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
JP 2004143153	A2	20040520	JP 2003-330904	2003 0924
US 2004068124	A1	20040408	US 2003-671948	2003 0929
PRIORITY APPLN. INFO.:			JP 2002-285161 A	2002 0930

OTHER SOURCE(S): MARPAT 140:311986

AB The present invention relates to novel ester compds. having formula: A1C(=O)OCR1R2A2-R3 (A1 = polymerizable functional group having a double bond; A2 = furan-diyl, tetrahydrofurandiyl or oxa-norbornane-diyl; R1,2 = monovalent hydrocarbon group, or R1 and R2 may bond together to form an aliphatic hydrocarbon ring with the carbon atom; R3 = hydrogen or a monovalent hydrocarbon group which may contain a hetero atom are polymerizable into polymers). Resist compns. comprising the polymers are sensitive to high-energy radiation, have an improved sensitivity, resolution, and etching resistance, and lend themselves to micropatterning with electron beams or deep-UV rays.

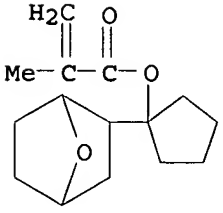
IT **676456-76-1P 676456-77-2P 676456-78-3P 676456-79-4P 676456-80-7P 676456-81-8P**
(ester compds. for polymers and photoresist compns.)

RN 676456-76-1 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, hexahydro-5-oxo-2,6-methanofuro[3,2-b]furan-3-yl ester, polymer with 3-hydroxytricyclo[3.3.1.13,7]dec-1-yl 2-methyl-2-propenoate and 1-(7-oxabicyclo[2.2.1]hept-2-yl)cyclopentyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

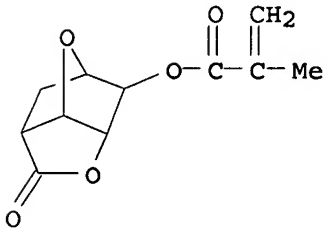
CM 1

CRN 676456-72-7
CMF C15 H22 O3



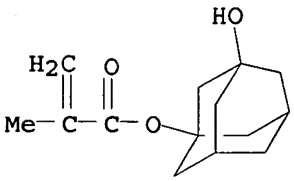
CM 2

CRN 274248-05-4
CMF C11 H12 O5



CM 3

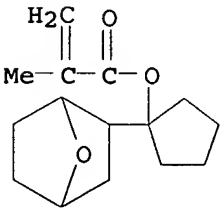
CRN 115372-36-6
CMF C14 H20 O3



RN 676456-77-2 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 3-hydroxytricyclo[3.3.1.13,7]dec-1-yl ester, polymer with 1-(7-oxabicyclo[2.2.1]hept-2-yl)cyclopentyl 2-methyl-2-propenoate and tetrahydro-2-oxo-3-furanyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

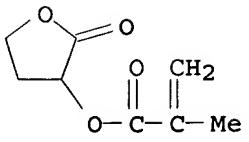
CM 1

CRN 676456-72-7
CMF C15 H22 O3



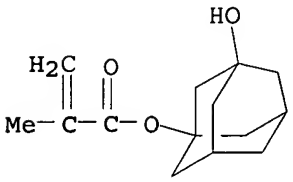
CM 2

CRN 195000-66-9
CMF C8 H10 O4



CM 3

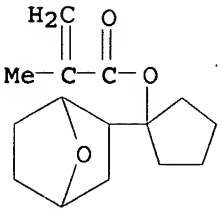
CRN 115372-36-6
CMF C14 H20 O3



RN 676456-78-3 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 2-ethyldecahydro-1,4:5,8-dimethanonaphthalen-2-yl ester, polymer with hexahydro-5-oxo-2,6-methanofuro[3,2-b]furan-3-yl 2-methyl-2-propenoate, 3-hydroxytricyclo[3.3.1.13,7]dec-1-yl 2-methyl-2-propenoate and 1-(7-oxabicyclo[2.2.1]hept-2-yl)cyclopentyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

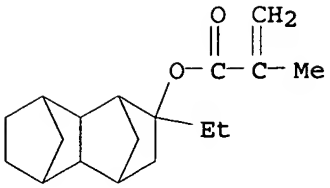
CM 1

CRN 676456-72-7
CMF C15 H22 O3



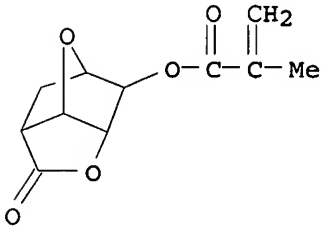
CM 2

CRN 485819-03-2
CMF C18 H26 O2



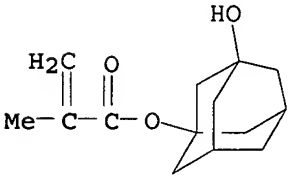
CM 3

CRN 274248-05-4
CMF C11 H12 O5



CM 4

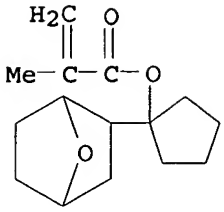
CRN 115372-36-6
CMF C14 H20 O3



RN 676456-79-4 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 2-ethyltricyclo[3.3.1.13,7]dec-2-yl ester, polymer with 3-hydroxytricyclo[3.3.1.13,7]dec-1-yl 2-methyl-2-propenoate, 1-(7-oxabicyclo[2.2.1]hept-2-yl)cyclopentyl 2-methyl-2-propenoate and tetrahydro-2-oxo-3-furanyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

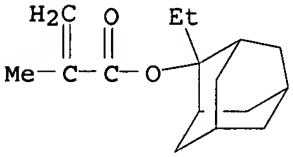
CM 1

CRN 676456-72-7
CMF C15 H22 O3



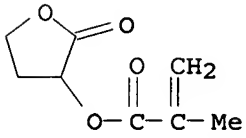
CM 2

CRN 209982-56-9
CMF C16 H24 O2



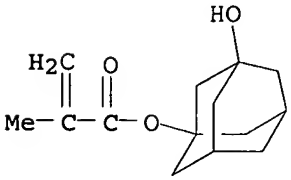
CM 3

CRN 195000-66-9
CMF C8 H10 O4



CM 4

CRN 115372-36-6
CMF C14 H20 O3

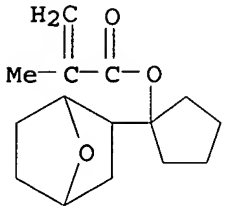


RN 676456-80-7 HCAPLUS
CN Bicyclo[2.2.1]hept-5-ene-2-carboxylic acid, tetrahydro-2-oxo-3-furanyl ester, polymer with 2,5-furandione and 1-(7-oxabicyclo[2.2.1]hept-2-yl)cyclopentyl 2-methyl-2-propenoate

(9CI) (CA INDEX NAME)

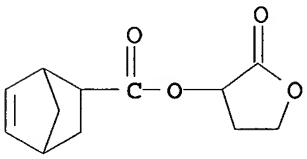
CM 1

CRN 676456-72-7
CMF C15 H22 O3



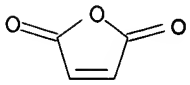
CM 2

CRN 264193-09-1
CMF C12 H14 O4



CM 3

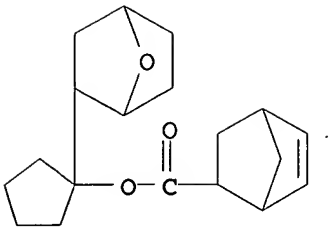
CRN 108-31-6
CMF C4 H2 O3



RN 676456-81-8 HCAPLUS
CN Bicyclo[2.2.1]hept-5-ene-2-carboxylic acid, 1-(7-oxabicyclo[2.2.1]hept-2-yl)cyclopentyl ester, polymer with 2,5-furandione and tetrahydro-2-oxo-3-furanyl bicyclo[2.2.1]hept-5-ene-2-carboxylate (9CI) (CA INDEX NAME)

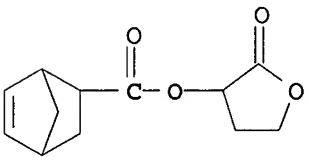
CM 1

CRN 676456-74-9
CMF C19 H26 O3



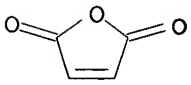
CM 2

CRN 264193-09-1
CMF C12 H14 O4



CM 3

CRN 108-31-6
CMF C4 H2 O3



IC ICM C08F020-30
ICS C08F032-08; G03F007-039
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 35, 38
IT 676456-75-0P **676456-76-1P 676456-77-2P 676456-78-3P 676456-79-4P 676456-80-7P 676456-81-8P**
(ester compds. for polymers and photoresist compns.)

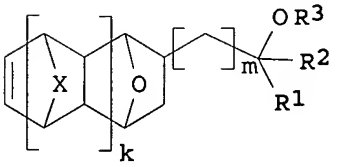
L26 ANSWER 9 OF 11 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2003:56212 HCAPLUS
DOCUMENT NUMBER: 138:115060
TITLE: Cycloalkenyl epoxy compounds, their polymers, positive photoresists containing them with high resolution and good adhesion to substrates, and photolithography using them
INVENTOR(S): Hasegawa, Koji; Kaneo, Takeshi; Watanabe, Takeshi
PATENT ASSIGNEE(S): Shin-Etsu Chemical Industry Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 37 pp.
CODEN: JKXXAF

DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003020313	A2	20030124	JP 2001-207289	20010709
US 2003050398	A1	20030313	US 2002-189706	20020703
US 2005142491	A1	20050630	US 2005-57008	20050211

PRIORITY APPLN. INFO.: JP 2001-207289 A 20010709
US 2002-189706 A3 20020703

OTHER SOURCE(S): MARPAT 138:115060
GI



I

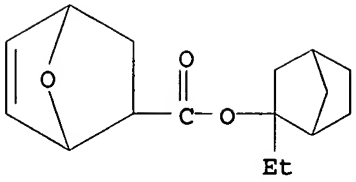
AB The invention relates to epoxy compds. I (R1, R2 = H, C1-10-alkyl, etc.; R3 = C1-10-alkyl, C1-15-acyl, C1-15-alkoxycarbonyl, etc.; X = CH2, O, S; k = 0, 1; m = 0-5). The photoresists are sensitive to ArF excimer laser beams.

IT **488720-38-3P 488720-40-7P**
(cycloalkenyl epoxide polymers for ArF laser-sensitive high-resolution pos. photoresists with good adhesion to substrates)

RN 488720-38-3 HCAPLUS
CN 7-Oxabicyclo[2.2.1]hept-5-ene-2-carboxylic acid, 2-ethylbicyclo[2.2.1]hept-2-yl ester, polymer with (α,α-dimethyl-7-oxabicyclo[2.2.1]hept-5-en-2-yl)methyl acetate and 2,5-furandione (9CI) (CA INDEX NAME)

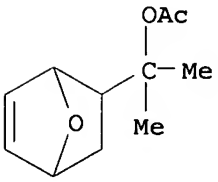
CM 1

CRN 488720-34-9
CMF C16 H22 O3



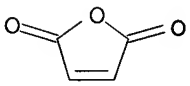
CM 2

CRN 488720-33-8
CMF C11 H16 O3



CM 3

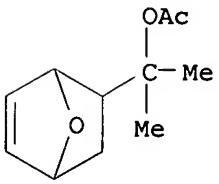
CRN 108-31-6
CMF C4 H2 O3



RN 488720-40-7 HCAPLUS
CN 2-Propenoic acid, 2-ethyltricyclo[3.3.1.13,7]dec-2-yl ester, polymer with (α,α-dimethyl-7-oxabicyclo[2.2.1]hept-5-en-2-yl)methyl acetate and 2,5-furandione (9CI) (CA INDEX NAME)

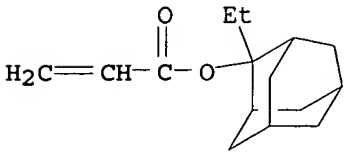
CM 1

CRN 488720-33-8
CMF C11 H16 O3



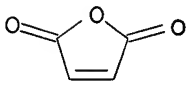
CM 2

CRN 303186-14-3
CMF C15 H22 O2



CM 3

CRN 108-31-6
CMF C4 H2 O3



IC ICM C08F034-00
ICS C08G061-12; G03F007-039
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
IT 488720-35-0P 488720-36-1P 488720-37-2P **488720-38-3P** 488720-39-4P **488720-40-7P** 488720-41-8P 488720-43-0P
(cycloalkenyl epoxide polymers for ArF laser-sensitive high-resolution pos. photoresists with good adhesion to substrates)

L26 ANSWER 10 OF 11 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2002:716915 HCAPLUS
DOCUMENT NUMBER: 137:270511
TITLE: Polymers, resist materials, and pattern formation method
INVENTOR(S): Nishi, Tsunehiro; Hasegawa, Koji; Nakashima, Mutsuo
PATENT ASSIGNEE(S): Shin-Etsu Chemical Co., Ltd., Japan
SOURCE: U.S. Pat. Appl. Publ., 37 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

ND	DATE	APPLICATION NO.	DATE
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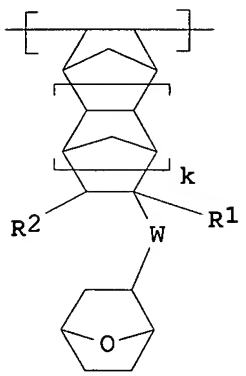
A1	20020919	US 2002-50478	2002 0116
B2	20040113		
B	20030901	TW 2002-91100626	2002 0116
A2	20021018	JP 2002-8244	

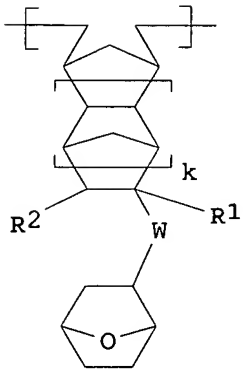
USHA SHRESTHA EIC 1700 REM 4B28

PRIORITY APPLN. INFO.: JP 2001-8613 A 2002 0117
2001 0117

GI



I



II

AB The present invention provides (1) a polymer which has excellent reactivity, rigidity and adhesion to the substrate, and undergoes a low degree of swelling during development, (2) a resist material which uses this polymer as the base resin and hence exhibits much higher resolving power and etching resistance than conventional resist materials, and (3) a pattern formation method using this resist material. Specifically, the present invention provides a novel polymer containing repeating units represented by I, II (R1 = H, Me, CH2CO2R3; R2= H, Me, CO2R3; R3 = C1-15 alkyl; W = C2-20 divalent hydrocarbon radical, which may have ≥ 1 ester linkage in its structure and may further be substituted by one or more other atomic group containing a heteroatom; k = 0,1) and having a weight-average mol. weight of 1,000-500,000, a resist material using the polymer as a base resin, and a pattern formation method using the resist material.

IT **461671-55-6P**
(polymers, photoresist materials, and pattern formation method)

RN 461671-55-6 HCAPLUS

CN Bicyclo[2.2.1]hept-5-ene-2-carboxylic acid, 2-ethylbicyclo[2.2.1]hept-2-yl ester, polymer with 2,5-furandione and 1-methyl-1-(7-oxabicyclo[2.2.1]hept-2-yl)ethyl bicyclo[2.2.1]hept-5-ene-2-carboxylate (9CI) (CA INDEX NAME)

CM 1

CRN 461671-54-5
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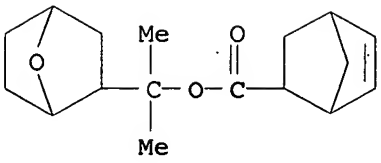
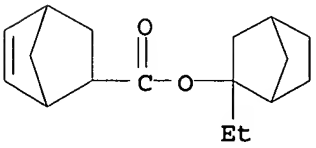


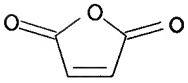
CM 2

CRN 330596-01-5
CMF C17 H24 O2



CM 3

CRN 108-31-6
CMF C4 H2 O3



IC ICM G03F007-039
ICS G03F007-38; G03F007-40
INCL 430270100
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 35, 38
IT 461671-53-4P **461671-55-6P** 461671-57-8P 461671-59-0P
461671-60-3P 461671-61-4P 461671-62-5P 461671-63-6P
461671-64-7P 461671-65-8P 461671-66-9P 461671-68-1P
(polymers, photoresist materials, and pattern formation method)
REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

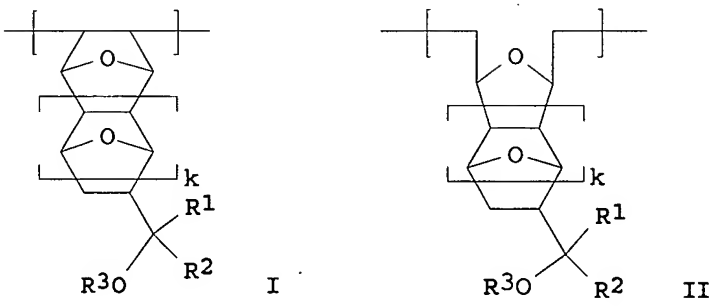
L26 ANSWER 11 OF 11 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2002:575607 HCAPLUS
DOCUMENT NUMBER: 137:132115
TITLE: Polymer, resist composition and patterning process
INVENTOR(S): Nishi, Tsunehiro; Nakashima, Mutsuo; Kobayashi, Tomohiro
PATENT ASSIGNEE(S): Shin-Etsu Chemical Co., Ltd., Japan
SOURCE: U.S. Pat. Appl. Publ., 35 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent

LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2002102493	A1	20020801	US 2001-221	2001 1204
US 6670094	B2	20031230		
JP 2002234913	A2	20020823	JP 2001-363803	2001 1129
TW 527523	B	20030411	TW 2001-90129860	2001 1203

PRIORITY APPLN. INFO.: JP 2000-368672 A 2000 1204

GI



I II

AB The present invention relates to a polymer comprising recurring units of I, II (R1,2 = H, C1-15 alkyl, R1,2 taken together, may form a ring; R3 = H, C1-15 alkyl, acyl or alkylsulfonyl or C2-15 alkoxycarbonyl or alkoxyalkyl which may have halogen substituents; not all R1-3 are hydrogen; k = 0 or 1) and having a Mw of 1,000-500,000.. The present invention relates to a photoresist composition comprising the polymer as a base resin which is sensitive to high-energy radiation, has excellent sensitivity, resolution, etching resistance, and minimized swell and lends itself to micropatterning with electron beams or deep-UV.

IT **444045-74-3P**
(polymer photoresist composition for patterning process)

RN 444045-74-3 HCAPLUS

CN Bicyclo[2.2.1]hept-5-ene-2-carboxylic acid, 2-ethylbicyclo[2.2.1]hept-2-yl ester, polymer with 2,5-furandione and 1-(7-oxabicyclo[2.2.1]hept-5-en-2-yl)cyclopentyl acetate (9CI) (CA INDEX NAME)

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CRN 444045-73-2
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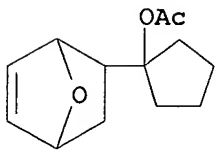
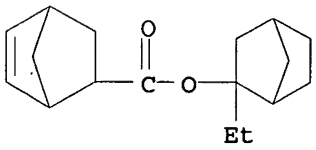


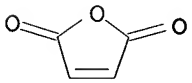
CM 2

CRN 330596-01-5
CMF C17 H24 O2



CM 3

CRN 108-31-6
CMF C4 H2 O3



IC ICM G03F007-038
ICS G03F007-38; G03F007-40; G03F007-30
INCL 430270100
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 35, 38
IT **444045-74-3P** 444045-76-5P 444045-78-7P 444105-77-5P
444105-79-7P 444105-81-1P 444105-83-3P 444105-85-5P
(polymer photoresist composition for patterning process)

Access DB# 174567

SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: Sin J. Lee Examiner #: 76060 Date: 12-15-05
Art Unit: 1752 Phone Number 30 2-1333 Serial Number: 10/765,919
Mail Box and Bldg/Room Location: 4D66 Results Format Preferred (circle): PAPER DISK E-MAIL
(Rem.)

If more than one search is submitted, please prioritize searches in order of need.

****

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Plz. Ale Bib.

Inventors (please provide full names):

Earliest Priority Filing Date:

**For Sequence Searches Only* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.*

Plz. search for a polymer having the repeat unit, which contains a substituent gp. of the formula (1). Shown in Cl. # 1

SCIENTIFIC REFERENCE BR
Sci Tech Inf Ctr
DEC 19 RECD
Pat. & T.M. Office

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STAFF USE ONLY	Type of Search		Vendors and cost where applicable
Searcher: ishe	NA Sequence (#)		STN $300.14
Searcher Phone #:	AA Sequence (#)		Dialog
Searcher Location:	Structure (#)	1	Questel/Orbit
Date Searcher Picked Up: 12/22/05	Bibliographic		Dr.Link
Date Completed: 12/22/05	Litigation		Lexis/Nexis
Searcher Prep & Review Time: 30	Fulltext		Sequence Systems
Clerical Prep Time: 30	Patent Family		WWW/Internet
Online Time: 52	Other		Other (specify)

PTO-1590 (8-01)

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Alexandria, Virginia 22313-1450
www.uspto.gov

Bib Data Sheet

CONFIRMATION NO. 4118

SERIAL NUMBER	FILING DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
10/765,919	01/29/2004 RULE	430	1752	0171-1058P

APPLICANTS

Jun Hatakeyama, Niigata-ken, JAPAN;

Takanobu Takeda, Niigata-ken, JAPAN;
Osamu Watanabe, Niigata-ken, JAPAN;

** CONTINUING DATA **********
None SJL

** FOREIGN APPLICATIONS **********
JAPAN 2003-021416 01/30/2003) SJL
JAPAN 2003-194033 07/09/2003)

IF REQUIRED, FOREIGN FILING LICENSE GRANTED
** 08/18/2005

Foreign Priority claimed	35 USC 119 (a-d) conditions met	Verified and Acknowledged	STATE OR COUNTRY	SHEETS DRAWING	TOTAL CLAIMS	INDEPENDENT CLAIMS
☑ yes ☐ no	☑ yes ☐ no ☐ Met after Allowance	Examiner's Signature SJL Initials	JAPAN	2	13	4

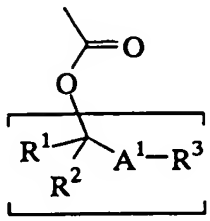
ADDRESS
02292
BIRCH STEWART KOLASCH & BIRCH
PO BOX 747
FALLS CHURCH , VA
22040-0747

TITLE
Polymer, resist composition and patterning process

FILING FEE RECEIVED	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time)

CLAIMS:

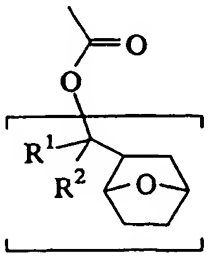
1. A polymer comprising recurring units containing silicon and recurring units having a substituent group of the general formula (1):



(1)

wherein A^1 is a divalent group selected from furandiyl, tetrahydrofurandiyl and oxanorbornanediyl, R^1 and R^2 are independently selected from straight, branched or cyclic monovalent hydrocarbon groups of 1 to 10 carbon atoms, or R^1 and R^2 taken together may form an aliphatic hydrocarbon ring with the carbon atom to which they are attached, and R^3 is hydrogen or a straight, branched or cyclic monovalent hydrocarbon group of 1 to 10 carbon atoms which may contain a hetero atom.

2. A polymer comprising recurring units containing silicon and recurring units having a substituent group of the general formula (2):



(2)

wherein R^1 and R^2 are independently selected from straight, branched or cyclic monovalent hydrocarbon groups of 1 to 10

```
=> fil reg
FILE 'REGISTRY' ENTERED AT 11:01:48 ON 22 DEC 2005

=> d his

     FILE 'HCAPLUS' ENTERED AT 09:06:02 ON 22 DEC 2005
L1             1 S US20050260521/PN
                 SEL RN

     FILE 'REGISTRY' ENTERED AT 09:06:31 ON 22 DEC 2005
L2            12 S E1-E12

     FILE 'LREGISTRY' ENTERED AT 09:40:05 ON 22 DEC 2005
L3               STR
L4               STR

     FILE 'REGISTRY' ENTERED AT 09:43:41 ON 22 DEC 2005
L5               SCR 2043
L6             0 S L3 AND L4 AND L5
L7             0 S L3 AND L4
L8               SCR 1146 OR 1135
L9             2 S L3 AND L8
L10              STR L3
L11            0 S L10 AND L4
L12            2 S L10 AND L8
L13            2 S L10 AND L5 AND L8
L14          110 S L10 AND L5 AND L8 FUL
                 SAV L14 LEE919/A
L15            7 S L14 AND L2
L16           30 S L14 AND 103.61.1/RID
L17           13 S L14 AND 16.138.6/RID
L18           40 S L14 AND 16.138/RID
L19              STR L10
L20            1 S L19 AND L5 AND L8
L21          157 S L19 AND L5 AND L8 FUL
                 SAV L21 LEE919A/A
L22          167 S L14 OR L21
L23           33 S L22 AND 103.61/RID
L24           45 S L22 AND 16.138/RID

     FILE 'HCAPLUS' ENTERED AT 10:32:56 ON 22 DEC 2005
L25          131 S L22
L26           11 S L23
L27           33 S L24
L28           34 S L26 OR L27
L29           97 S L25 NOT L28

     FILE 'REGISTRY' ENTERED AT 10:35:45 ON 22 DEC 2005
L30          110 S L22 NOT 1-20/N

     FILE 'HCAPLUS' ENTERED AT 10:43:23 ON 22 DEC 2005
L31           65 S L30
L32           32 S L31 NOT L28
L33           34 S L31 AND PHOTOG?/SC
L34            1 S L33 NOT L28



=> d que l27
L5               SCR 2043
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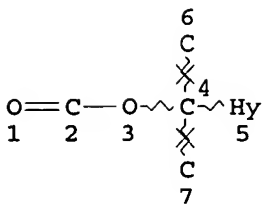
L8 SCR 1146 OR 1135
L10 STR



NODE ATTRIBUTES:
NSPEC IS RC AT 4
NSPEC IS RC AT 6
NSPEC IS RC AT 7
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GGCAT IS SAT AT 5
DEFAULT ECLEVEL IS LIMITED
ECOUNT IS X6 C AT 5

GRAPH ATTRIBUTES:
RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS 7

STEREO ATTRIBUTES: NONE
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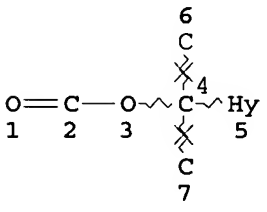
L19 STR



NODE ATTRIBUTES:
NSPEC IS RC AT 4
NSPEC IS RC AT 6
NSPEC IS RC AT 7
DEFAULT MLEVEL IS ATOM
DEFAULT ECLEVEL IS LIMITED
ECOUNT IS X6 C X1 O AT 5

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RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS 7

STEREO ATTRIBUTES: NONE
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L22 167 SEA FILE=REGISTRY ABB=ON PLU=ON L14 OR L21
L24 45 SEA FILE=REGISTRY ABB=ON PLU=ON L22 AND 16.138/RID
L27 33 SEA FILE=HCAPLUS ABB=ON PLU=ON L24

=> fil hcap
FILE 'HCAPLUS' ENTERED AT 11:02:27 ON 22 DEC 2005

=> d l27 1-33 ibib abs hitstr hitind

L27 ANSWER 1 OF 33 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2005:822667 HCAPLUS
DOCUMENT NUMBER: 143:219454
TITLE: Chemically amplified photoresists with high sensitivity, resolution, and less scums, silsesquioxane compositions therefor, and method for forming precise patterns therewith
INVENTOR(S): Hatakeyama, Jun
PATENT ASSIGNEE(S): Shin-Etsu Chemical Industry Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 102 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005221714	A2	20050818	JP 2004-28994	2004 0205

PRIORITY APPLN. INFO.: JP 2004-28994 2004 0205

GI

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

AB The compns. contain (A) organopolysiloxanes prepared by hydrolytic condensation of silane monomers R1SiX3 (R1 = organic group having acid-decomposable group; X = halo, OH, C1-10 alkoxy or acyl) and optionally other silane monomers R0SiX3 (R0 = organic group for tight adhesion; X = same as above) and (B) polymers having repeating units [R2C(CO2R5)CH2] [R2 = H, Me, F, CF3, CN, CH2CO2R3, CH2OR4; R3 = C1-4 linear or branched alkyl; R4 = H, C1-4 linear or branched alkyl or acyl; R5 = R6R7CCH2SiR8R9R10, R11C(CH2SiR12R13R14)2, C(CH2SiR15R16R17)3, Q1, Q2; R6, R7, R11 = H, C1-10 linear, branched, or cyclic alkyl; R8-R10, R12-R17 = C1-10 linear, branched, or cyclic alkyl, C6-10 aryl, trialkylsilyl, Si-containing group bonded with Si in the formula by siloxane or silalkylene linkage; R28-R30 = C1-20 linear, branched, or cyclic alkyl; R18, R19, R22, R23, R26, R27, R31, R32, R35, R36, R39-R41 = H, C1-20 linear, branched, or cyclic alkyl; R20, R21, R24, R25, R33, R34, R37, R38 = H, C1-20 linear, branched, or cyclic alkyl, fluorinated C1-20 alkyl, C6-20 aryl; p, q, r, s = 0-10; $1 \leq p + q + s \leq 20$]. Also claimed are compns. containing A and (C) copolymers of silyl-branched vinyl repeating units and other repeating units having groups whose alkaline solubility can be increased by acids (both Markush given). Alternatively, the compns. contain (R1SiOx) (R1 = same as above; x = 1.0-1.5) instead of A. Also claimed are chemical amplified photoresists containing the above compns., acid generators, organic solvents, and optionally dissoln. inhibitors. Basic compds. may be contained in the

photoresists. In the process, the photoresists are applied on substrates (e.g., semiconductor wafers equipped with photoresist underlayers), heat treated, exposed to high-energy rays or electron beams via photomasks, and developed (after further heat treatment) to give patterns. After the patterns are formed, layers under them may be etched with O plasma or with Br- or Cl-containing halogen gases.

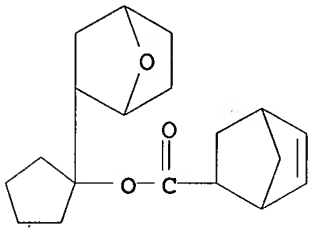
IT **802917-23-3P 862379-21-3P**
(silsesquioxane-based chemical amplified photoresists with high sensitivity, resolution, and less scums for forming precise patterns)

RN 802917-23-3 HCAPLUS

CN Bicyclo[2.2.1]hept-5-ene-2-carboxylic acid, 1-(7-oxabicyclo[2.2.1]hept-2-yl)cyclopentyl ester, polymer with 2,5-furandione and heptacyclopentyl[(ethenyldimethylsilyl)oxy]pentacyclo[9.5.1.13,9.15,15.17,13]octasiloxane (9CI) (CA INDEX NAME)

CM 1

CRN 676456-74-9
CMF C19 H26 O3



CM 2

CRN 312693-40-6
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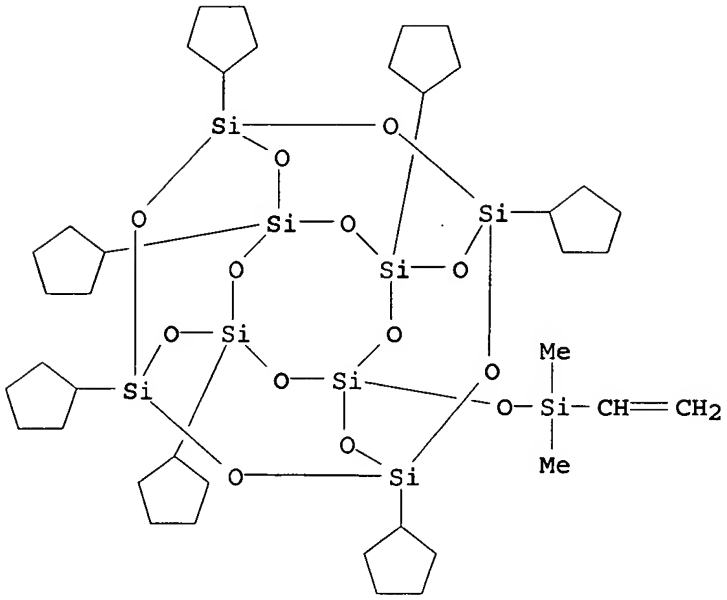

CM 3

CRN 108-31-6
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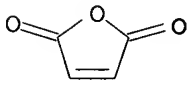
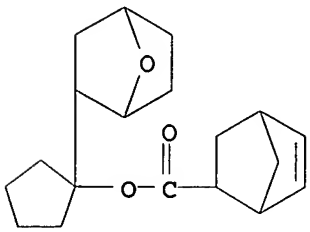


RN 862379-21-3 HCAPLUS
CN Bicyclo[2.2.1]hept-5-ene-2-carboxylic acid, 1-(7-oxabicyclo[2.2.1]hept-2-yl)cyclopentyl ester, polymer with ethenylheptamethylcyclotetrasiloxane and 2,5-furandione (9CI) (CA INDEX NAME)

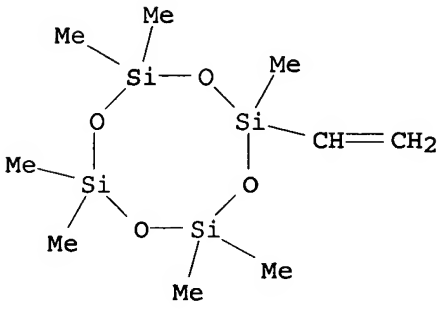
CM 1

CRN 676456-74-9
CMF C19 H26 O3



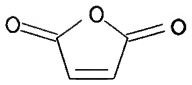
CM 2

CRN 3763-39-1
CMF C9 H24 O4 Si4



CM 3

CRN 108-31-6
CMF C4 H2 O3



IC ICM G03F007-075
ICS C08F030-08; G03F007-039; H01L021-027; C08G077-14
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 76
IT 630417-20-8P 800397-92-6P **802917-23-3P** 802986-14-7P
819837-18-8P 862379-20-2P **862379-21-3P** 862383-75-3P
862383-77-5P
(silsesquioxane-based chemical amplified photoresists with high sensitivity, resolution, and less scums for forming precise patterns)

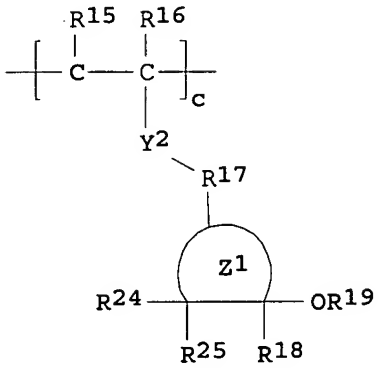
L27 ANSWER 2 OF 33 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2005:445341 HCAPLUS
DOCUMENT NUMBER: 142:490394
TITLE: Acrylic polymers for chemically amplified positive photoresists, and method for pattern formation using them
INVENTOR(S): Hatakeyama, Jun; Harada, Yuji; Kawai, Yoshio
PATENT ASSIGNEE(S): Shin-Etsu Chemical Industry Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 56 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE

JP 2005133066 A2 20050526 JP 2004-215907 2004 0723

PRIORITY APPLN. INFO.: JP 2003-350143 A 2003 1008

GI



I

AB The polymers have repeating units of (A) [CHR2CR1[CO2CR3R4(R5R6)]]a and (B) [CHR8CR9[Y1R10R23R11CR12R13(OR14)]]b and/or I [R1 = H, Me, CH2CO2R7; R2 = H, Me, CO2R7; R3, R4 = C1-10 hydrocarbyl, R3 and R4 may link together to form an aliphatic hydrocarbon ring with connecting C; R5 = furandiyl, tetrahydrofurandiyl, and oxanorbornanediyl; R6 = H, C1-10 hydrocarbyl; R7 = H, C1-15 alkyl; R9, R16 = H, Me, CH2CO2R7; R8, R15 = H, Me, CO2R7; R10, R11, R17 = single bond, C1-4 alkylene; R12, R13 = trifluoromethyl, Me, R12 = R13 ≠ Me; R18 = F, trifluoromethyl; R14, R19 = H, acid-labile group; R23 = (O-, S-containing bridged) C4-20 cyclic alkylene; R24, R25 = H, F; Z1 = (O-, S-containing) C4-12 bridged cyclic hydrocarbon group; Y1, Y2 = O, CO2; a = 0.1-0.8; b, c = 0-0.8; (b + c) = 0.05-0.8]. The photoresists show high sensitivity and resolution, and low line edge roughness.

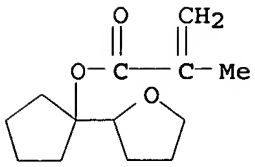
IT **851866-59-6P**
(acrylic polymers having specific acid-labile groups for chemical amplified pos. photoresists)

RN 851866-59-6 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 3-hydroxytricyclo[3.3.1.13,7]dec-1-yl ester, polymer with 1-(tetrahydro-2-furanyl)cyclopentyl 2-methyl-2-propenoate and 5-[3,3,3-trifluoro-2-hydroxy-2-(trifluoromethyl)propyl]bicyclo[2.2.1]hept-2-yl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

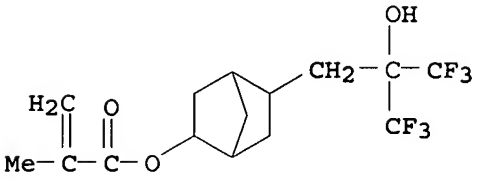
CM 1

CRN 819837-30-4
CMF C13 H20 O3



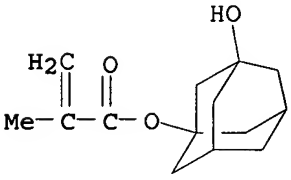
CM 2

CRN 617711-94-1
CMF C15 H18 F6 O3



CM 3

CRN 115372-36-6
CMF C14 H20 O3



IC ICM C08F220-18
ICS G03F007-033; G03F007-039; H01L021-027
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 38
IT 851866-57-4P 851866-58-5P **851866-59-6P** 851866-60-9P
851866-61-0P 851866-62-1P 851866-63-2P
(acrylic polymers having specific acid-labile groups for chemical amplified pos. photoresists)

L27 ANSWER 3 OF 33 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2005:428605 HCAPLUS
DOCUMENT NUMBER: 142:472603
TITLE: Chemical amplification-type positive resist materials and pattern formation
INVENTOR(S): Hatakeyama, Jun; Kawai, Yoshio
PATENT ASSIGNEE(S): Shin-Etsu Chemical Industry Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 42 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent

LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005128146	A2	20050519	JP 2003-361849	2003 1022

PRIORITY APPLN. INFO.: JP 2003-361849 2003 1022

OTHER SOURCE(S): MARPAT 142:472603

AB The resist materials comprise (A) ≥1 base polymers selected from poly(acrylic acids), their derivs., cycloolefin derivative-maleic anhydride alternating copolymers, cycloolefin derivative-maleic anhydride-acrylic acid derivative copolymers, cycloolefin derivative-maleimide alternating copolymers, cycloolefin derivative-maleimide-acrylic acid derivative copolymers, polynorbornenes, and metathesis ring-opening polymers, (B) R4[R3C(OH)R1R2]n (R1, R2 = H, F, C1-4 alkyl, fluorinated alkyl; R1 and/or R2 = F-containing group; R3 = single bond, C1-4 alkylene; R4 = C4-20 n-valent cycloalkyl; R4 may contain OH, ether, ester, CO, lactone group; n = 1-4), (C) organic solvents, and (D) acid generators. Patterns are formed by applying the materials on substrates, heating, exposing to high-energy ray or electron beam via photomasks, heating as necessary, and developing. The materials show low line-edge roughness and decreased development residues caused by swelling in development measured by QCM (quartz crystal microbalance) method.

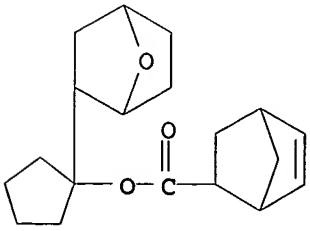
IT **851473-87-5**
(chemical amplification-type pos. resists with low swelling in development for fine pattern formation)

RN 851473-87-5 HCAPLUS

CN Bicyclo[2.2.1]hept-5-ene-2-carboxylic acid, methyl ester, polymer with 2,5-furandione and 1-(7-oxabicyclo[2.2.1]hept-2-yl)cyclopentyl bicyclo[2.2.1]hept-5-ene-2-carboxylate (9CI) (CA INDEX NAME)

CM 1

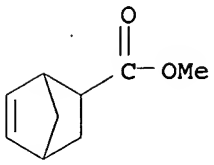
CRN 676456-74-9
CMF C19 H26 O3



CM 2

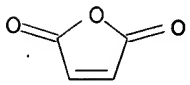
CRN 6203-08-3

CMF C9 H12 O2



CM 3

CRN 108-31-6
CMF C4 H2 O3



IC ICM G03F007-004
ICS G03F007-039; H01L021-027
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
IT 368872-75-7 485819-05-4 485819-08-7 **851473-87-5**
(chemical amplification-type pos. resists with low swelling in development for fine pattern formation)

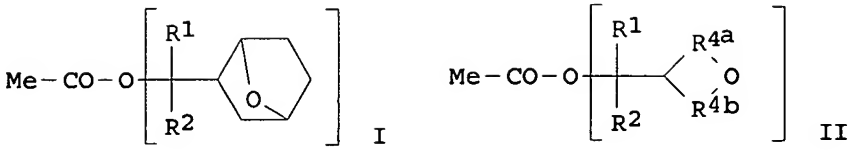
L27 ANSWER 4 OF 33 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2005:135758 HCAPLUS
DOCUMENT NUMBER: 142:228725
TITLE: Oxygen plasma-resistant radiation-sensitive resists, their patterning, and macromolecules therefor
INVENTOR(S): Hatakeyama, Jun; Takeda, Takanobu; Watanabe, Osamu
PATENT ASSIGNEE(S): Shin-Etsu Chemical Industry Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 72 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005042085	A2	20050217	JP 2004-14354	2004 0122
US 2005260521	A1	20051124	US 2004-765919	2004 0129

PRIORITY APPLN. INFO.: JP 2003-21416 A 2003 0130

JP 2003-194033 A
2003
0709

GI



AB The macromols. have Si-bearing repeating unit and unit (i) MeCO2[CR1R2(A1R3)] [A1 = (tetrahydro)furandiyl, oxanorbornanediyl; R1, R2 = C1-10 hydrocarbyl; R3 = H, C1-10 hydrocarbyl], (ii) I (R'1, R'2 = C1-10 hydrocarbyl), and/or (iii) II [R''1, R''2 = C1-10 hydrocarbyl; C1-10 hydrocarbyl; R4a, R4b = single bond, C1-4 alk(ne)ylene within total C number of 3-60]. Pos.-working (chemical-amplified) resists containing the macromols., and their patterning with ≤300-nm high-energy or electron beams are also claimed. The resist patterns are resistant against O plasma and Cl- or Br-containing gas etchants.

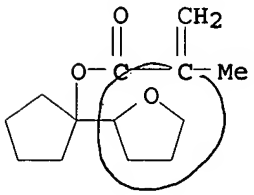
IT **843647-82-5P 843647-86-9P 843647-87-0P 843647-88-1P**
(photoresists; Si- and prescribed cyclic group-containing polymers for oxygen plasma-resistant pos. photoresists)

RN 843647-82-5 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1-(tetrahydro-2-furanyl)cyclopentyl ester, polymer with 4-ethenylphenol and 2-[2,2,2-trimethyl-1,1-bis(trimethylsilyl)disilanyl]ethyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

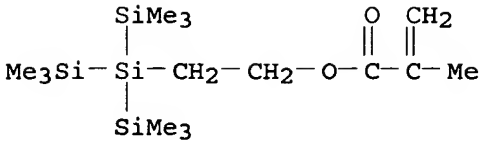
CM 1

CRN 819837-30-4
CMF C13 H20 O3



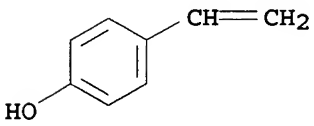
CM 2

CRN 211369-53-8
CMF C15 H36 O2 Si4



CM 3

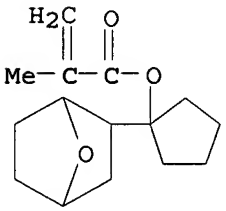
CRN 2628-17-3
CMF C8 H8 O



RN 843647-86-9 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 1-(7-oxabicyclo[2.2.1]hept-2-yl)cyclopentyl ester, polymer with ethenylheptamethylcyclotetrasiloxane and 2,5-furandione (9CI) (CA INDEX NAME)

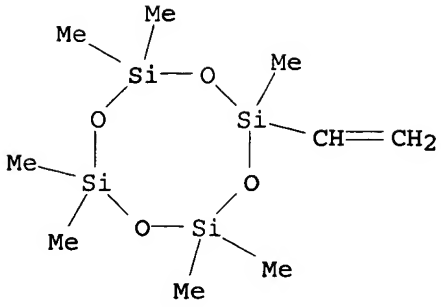
CM 1

CRN 676456-72-7
CMF C15 H22 O3



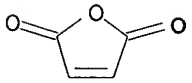
CM 2

CRN 3763-39-1
CMF C9 H24 O4 Si4



CM 3

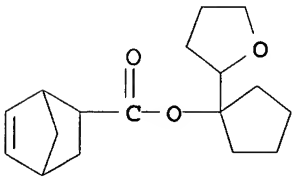
CRN 108-31-6
CMF C4 H2 O3



RN 843647-87-0 HCAPLUS
CN Bicyclo[2.2.1]hept-5-ene-2-carboxylic acid, 1-(tetrahydro-2-furanyl)cyclopentyl ester, polymer with ethenylheptamethylcyclotetrasiloxane, 2,5-furandione and 1-(7-oxabicyclo[2.2.1]hept-2-yl)cyclopentyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

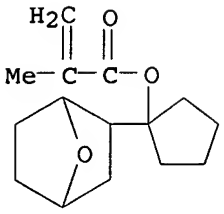
CM 1

CRN 676456-73-8
CMF C17 H24 O3



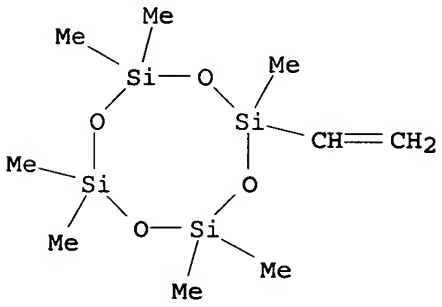
CM 2

CRN 676456-72-7
CMF C15 H22 O3



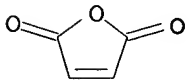
CM 3

CRN 3763-39-1
CMF C9 H24 O4 Si4



CM 4

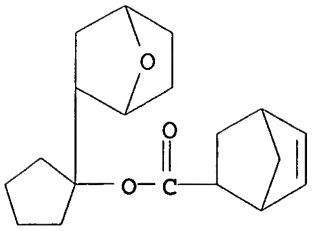
CRN 108-31-6
CMF C4 H2 O3



RN 843647-88-1 HCAPLUS
CN Bicyclo[2.2.1]hept-5-ene-2-carboxylic acid, 1-(7-oxabicyclo[2.2.1]hept-2-yl)cyclopentyl ester, polymer with 2,5-furandione and hexahydro-5-oxo-2,6-methanofuro[3,2-b]furan-3-yl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

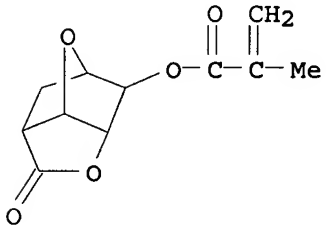
CM 1

CRN 676456-74-9
CMF C19 H26 O3



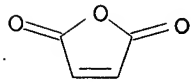
CM 2

CRN 274248-05-4
CMF C11 H12 O5



CM 3

CRN 108-31-6
CMF C4 H2 O3



IC ICM C08F230-08
ICS G03F007-039; G03F007-075; H01L021-027
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 38
IT **843647-82-5P** 843647-84-7P 843647-85-8P
843647-86-9P 843647-87-0P 843647-88-1P
843647-89-2P
(photoresists; Si- and prescribed cyclic group-containing polymers for oxygen plasma-resistant pos. photoresists)

L27 ANSWER 5 OF 33 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2005:33606 HCAPLUS
DOCUMENT NUMBER: 142:103181
TITLE: Acrylic polymers, their chemically amplified positive photoresists with high resolution and sensitivity and suppressed line edge roughness, and photolithography using them
INVENTOR(S): Hatakeyama, Jun; Watanabe, Takeshi; Takeda, Takanobu

PATENT ASSIGNEE(S): Shin-Etsu Chemical Industry Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 58 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005008765	A2	20050113	JP 2003-174894	2003 0619

PRIORITY APPLN. INFO.: JP 2003-174894 2003 0619

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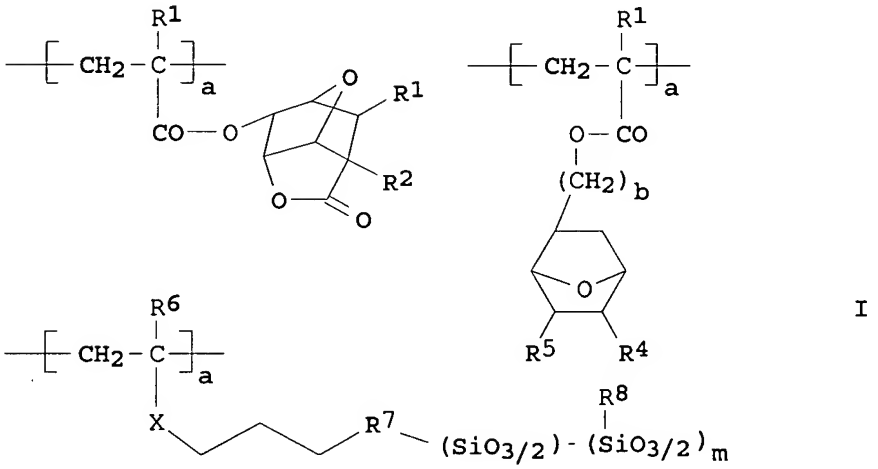


I

AB The acrylic polymers contain repeating units I [R1, R6 = H, Me, F, CF3, CN, CH2CO2R12, CH2OR13; R2 = H, Me, CN; R3 = H, ester; R4, R5 = H, ester, lactone-containing group; R8 = H, C1-10 alkyl, fluorinated alkyl; R7 = single bond, (SiR9R10R11)n; R9, R10 = C1-10 alkyl; R11 = single bond, O, C1-4 alkylene; X = ester, ether; a, b ≥0; c >0; 0 < (a + b)/(a + b + c) < 0.8; 0 < c/(a + b + c) < 0.5; m = 4-40; n = 1-20; p = 0-2; R12 = C1-4 alkyl; R13 = H, C1-4 alkyl, C1-4 acyl] and other repeating units that increase alkali solubility of the polymers in the presence of acids. The photolithog. may involve etching with O plasma or halogen gases containing Cl or Br.

IT **819837-31-5P**
(acrylic polymers having oxonorbornane and polyhedral oligosilsesquioxane pendants for pos. photoresists with high resolution and suppressed line edge roughness)

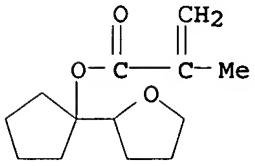
RN 819837-31-5 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 3-(heptacyclopentylpentacyclo[9.5.1.1 3,9.15,15.17,13]octasiloxanyl)propyl ester, polymer with

hexahydro-5-oxo-2,6-methanofuro[3,2-b]furan-3-yl
2-methyl-2-propenoate and 1-(tetrahydro-2-furanyl)cyclopentyl
2-methyl-2-propenoate (9CI) (CA INDEX NAME)

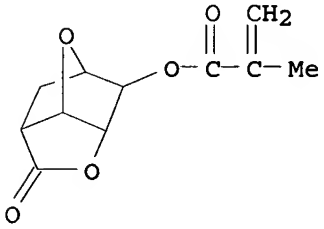
CM 1

CRN 819837-30-4
CMF C13 H20 O3



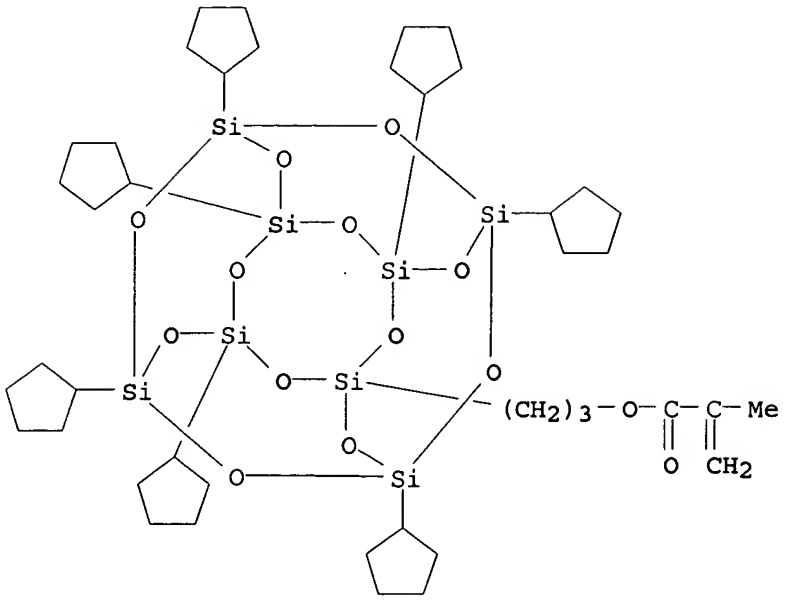
CM 2

CRN 274248-05-4
CMF C11 H12 O5



CM 3

CRN 169391-91-7
CMF C42 H74 O14 Si8



IC ICM C08F230-08
ICS G03F007-039; G03F007-075
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 38
IT 819837-18-8P 819837-20-2P 819837-22-4P 819837-23-5P
819837-25-7P 819837-27-9P 819837-29-1P **819837-31-5P**
819837-32-6P 819837-34-8P
(acrylic polymers having oxonorbornane and polyhedral oligosilsesquioxane pendants for pos. photoresists with high resolution and suppressed line edge roughness)

L27 ANSWER 6 OF 33 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2004:1036753 HCAPLUS
DOCUMENT NUMBER: 142:30014
TITLE: Silicon-containing polymer, resist composition and patterning process
INVENTOR(S): Hatakeyama, Jun; Takeda, Takanobu
PATENT ASSIGNEE(S): Japan
SOURCE: U.S. Pat. Appl. Publ., 38 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004242821	A1	20041202	US 2004-853783	2004 0526
JP 2004352743	A2	20041216	JP 2003-148656	2003 0527

PRIORITY APPLN. INFO.: JP 2003-148656 A

2003
0527

AB Novel silicon-containing polymers are provided comprising recurring units having a POSS pendant and units which improve alkali solubility under the action of an acid. Resist compns. comprising the polymers are sensitive to high-energy radiation and have a high sensitivity and resolution at a wavelength of up to 300 nm and improved resistance to oxygen plasma etching.

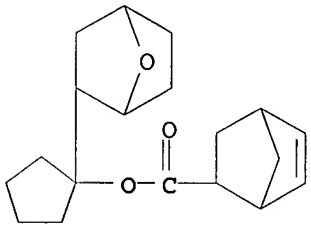
IT **802917-23-3P**
(silicon-containing polymer, resist composition and patterning process)

RN 802917-23-3 HCAPLUS

CN Bicyclo[2.2.1]hept-5-ene-2-carboxylic acid, 1-(7-oxabicyclo[2.2.1]hept-2-yl)cyclopentyl ester, polymer with 2,5-furandione and heptacyclopentyl[(ethenyldimethylsilyl)oxy]pentacyclo[9.5.1.13,9.15,15.17,13]octasiloxane (9CI) (CA INDEX NAME)

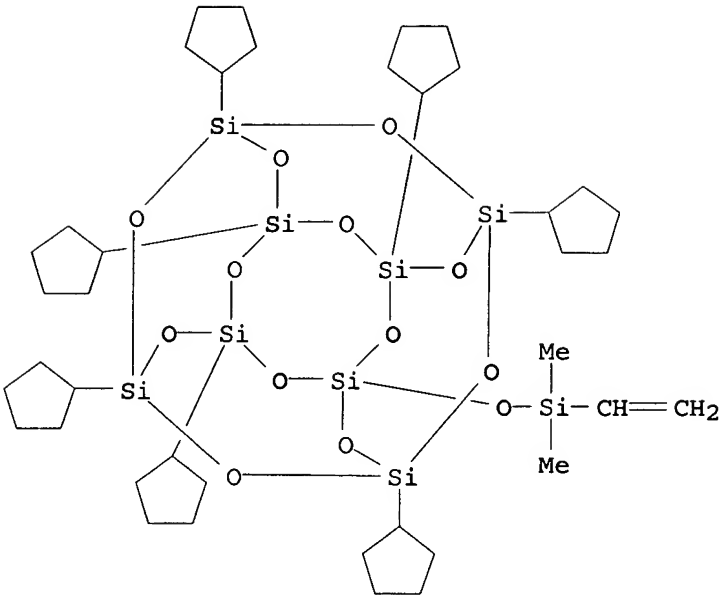
CM 1

CRN 676456-74-9
CMF C19 H26 O3



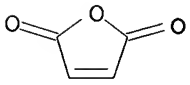
CM 2

CRN 312693-40-6
CMF C39 H72 O13 Si9



CM 3

CRN 108-31-6
CMF C4 H2 O3



IC ICM G03F007-004
ICS C08F122-04; C08F222-04
INCL 526250000; 430270100; 430322000; 430330000; 526271000; 526279000
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 38
IT 802917-18-6P 802917-19-7P 802917-20-0P 802917-21-1P
802917-22-2P **802917-23-3P** 802917-24-4P 802917-25-5P
(silicon-containing polymer, resist composition and patterning process)

L27 ANSWER 7 OF 33 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2004:1012045 HCAPLUS
DOCUMENT NUMBER: 142:13671
TITLE: Photosensitive resin composition
INVENTOR(S): Kanna, Shinichi; Mizutani, Kazuyoshi; Sasaki, Tomoya
PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan
SOURCE: Eur. Pat. Appl., 133 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1480079	A2	20041124	EP 2004-19923	2003 0606
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
JP 2004012898	A2	20040115	JP 2002-167393	2002 0607
JP 2004029111	A2	20040129	JP 2002-181384	2002 0621
JP 2004029136	A2	20040129	JP 2002-181588	2002 0621
EP 1376232	A1	20040102	EP 2003-12226	2003 0606
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
PRIORITY APPLN. INFO.:			JP 2002-167393 A	2002 0607
			JP 2002-181384 A	2002 0621
			JP 2002-181588 A	2002 0621
			EP 2003-12226 A3	2003 0606

AB The photosensitive resin composition of the present invention exhibites significant transmissibility at the use of an exposure light source of 160 nm or less, more specifically F2 excimer laser light, where line edge roughness and development time dependence are small and a problem of footing formation is improved. The photosensitive resin comprises a resin which decomps. by an action of acid to increase the solubility in alkali developer, in which the resin contains a specific repeat unit; a compound capable of generating an acid upon irradiation with one of an actinic ray and a radiation, in which the compound includes at least two kinds of compds. selected from the group consisting of specific compds (B1), (B2), (B3) and (B4). (B1) is a compound capable of generating aliphatic or aromatic sulfonic acid substituted with at least one fluorine atom upon irradiation with one of an actinic ray and a radiation; (B2) is a compound capable of generating aliphatic or aromatic sulfonic acid containing no fluorine atom upon irradiation with one of an actinic ray and a radiation; (B3) is a compound capable of generating aliphatic or aromatic carboxylic acid substituted with at least one fluorine atom upon irradiation with one of an actinic ray and a radiation; and (B4) is a compound capable of generating aliphatic

or aromatic carboxylic acid containing no fluorine atom. upon irradiation with one of an actinic ray and a radiation.

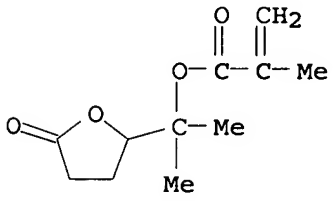
IT **798556-54-4**
(photosensitive resin composition)

RN 798556-54-4 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1-methyl-1-(tetrahydro-5-oxo-2-furanyl)ethyl ester, polymer with α-(difluoromethyl)-4-ethenyl-α-(trifluoromethyl)benzenemethanol and 1-[1-(4-ethenylphenoxy)-1-methylethyl]tricyclo[3.3.1.13,7]decane (9CI) (CA INDEX NAME)

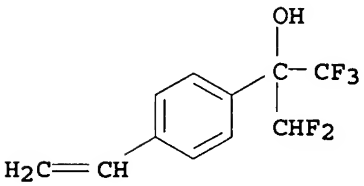
CM 1

CRN 798556-53-3
CMF C11 H16 O4



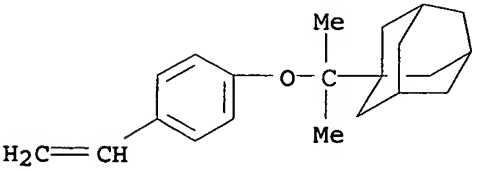
CM 2

CRN 485390-53-2
CMF C11 H9 F5 O



CM 3

CRN 430437-25-5
CMF C21 H28 O



IC ICM G03F007-039
ICS G03F007-004

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and

Other Reprographic Processes)
Section cross-reference(s): 38

IT 143336-94-1 367522-49-4 370102-83-3 370866-15-2
430437-13-1 430437-14-2 430437-15-3 430437-18-6
430437-19-7 430437-21-1 430437-24-4 430437-27-7
430437-29-9 430437-33-5 430437-34-6 430437-35-7
430437-36-8 430437-38-0 430437-39-1 430437-40-4
485390-41-8 485390-43-0 485390-44-1 485390-45-2
485390-46-3 485390-47-4 485390-49-6 485390-52-1
485390-55-4 485390-56-5 485390-57-6 485390-58-7
485390-62-3 485390-63-4 485390-64-5 485390-65-6
485390-66-7 485390-67-8 485390-68-9 485390-69-0
487048-93-1 500212-80-6 500212-86-2 500212-88-4
518027-87-7 524952-70-3 607710-77-0 637351-57-6
798556-54-4 798556-55-5 798556-56-6 798556-57-7
798556-61-3 798556-62-4 798556-63-5 798556-64-6
798556-65-7 798556-66-8 798556-67-9 798556-68-0
798556-69-1 798556-70-4 798556-71-5 798556-72-6
798556-73-7 798556-75-9 798556-76-0 798556-77-1
798556-85-1 798556-86-2 798556-88-4 798556-90-8
798556-91-9 798556-92-0 798556-93-1
(photosensitive resin composition)

L27 ANSWER 8 OF 33 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2004:261017 HCAPLUS
DOCUMENT NUMBER: 140:311986
TITLE: Ester compounds, polymers, resist compositions and patterning process
INVENTOR(S): Hasegawa, K.; Kinsho, T.; Watanabe, T.
PATENT ASSIGNEE(S): Shin-Etsu Chemical Co., Ltd., Japan
SOURCE: Eur. Pat. Appl., 48 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1403295	A2	20040331	EP 2003-256075	2003 0926
EP 1403295	A3	20040414		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
JP 2004143153	A2	20040520	JP 2003-330904	2003 0924
US 2004068124	A1	20040408	US 2003-671948	2003 0929
PRIORITY APPLN. INFO.:			JP 2002-285161 A	2002 0930

OTHER SOURCE(S): MARPAT 140:311986
AB The present invention relates to novel ester compds. having formula: A1C(=O)OCR1R2A2-R3 (A1 = polymerizable functional group

having a double bond; A2 = furan-diyl, tetrahydrofurandiyl or oxa-norbornane-diyl; R1,2 = monovalent hydrocarbon group, or R1 and R2 may bond together to form an aliphatic hydrocarbon ring with the carbon atom; R3 = hydrogen or a monovalent hydrocarbon group which may contain a hetero atom are polymerizable into polymers). Resist compns. comprising the polymers are sensitive to high-energy radiation, have an improved sensitivity, resolution, and etching resistance, and lend themselves to micropatterning with electron beams or deep-UV rays.

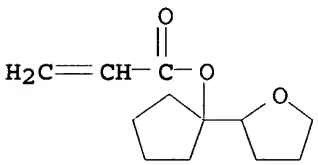
IT **676456-75-0P 676456-77-2P 676456-79-4P 676456-80-7P 676456-81-8P**
(ester compds. for polymers and photoresist compns.)

RN 676456-75-0 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, hexahydro-2-oxo-3,5-methano-2H-cyclopenta[b]furan-6-yl ester, polymer with 3-hydroxytricyclo[3.3.1.13,7]dec-1-yl 2-methyl-2-propenoate and 1-(tetrahydro-2-furanyl)cyclopentyl 2-propenoate (9CI) (CA INDEX NAME)

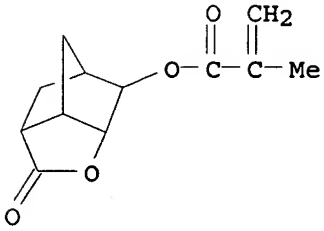
CM 1

CRN 676456-68-1
CMF C12 H18 O3



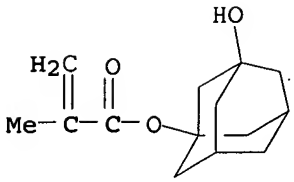
CM 2

CRN 254900-07-7
CMF C12 H14 O4



CM 3

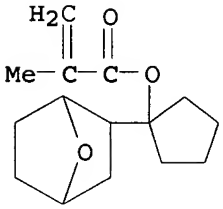
CRN 115372-36-6
CMF C14 H20 O3



RN 676456-77-2 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 3-hydroxytricyclo[3.3.1.13,7]dec-1-yl ester, polymer with 1-(7-oxabicyclo[2.2.1]hept-2-yl)cyclopentyl 2-methyl-2-propenoate and tetrahydro-2-oxo-3-furanyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

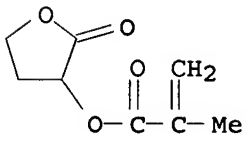
CM 1

CRN 676456-72-7
CMF C15 H22 O3



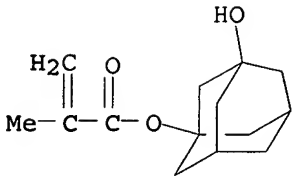
CM 2

CRN 195000-66-9
CMF C8 H10 O4



CM 3

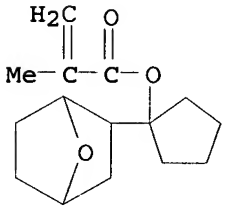
CRN 115372-36-6
CMF C14 H20 O3



RN 676456-79-4 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 2-ethyltricyclo[3.3.1.13,7]dec-2-yl ester, polymer with 3-hydroxytricyclo[3.3.1.13,7]dec-1-yl 2-methyl-2-propenoate, 1-(7-oxabicyclo[2.2.1]hept-2-yl)cyclopentyl 2-methyl-2-propenoate and tetrahydro-2-oxo-3-furanyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

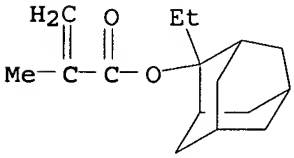
CM 1

CRN 676456-72-7
CMF C15 H22 O3



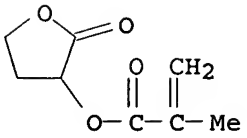
CM 2

CRN 209982-56-9
CMF C16 H24 O2



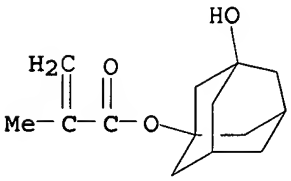
CM 3

CRN 195000-66-9
CMF C8 H10 O4



CM 4

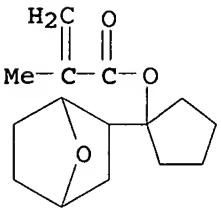
CRN 115372-36-6
CMF C14 H20 O3



RN 676456-80-7 HCAPLUS
CN Bicyclo[2.2.1]hept-5-ene-2-carboxylic acid, tetrahydro-2-oxo-3-furanyl ester, polymer with 2,5-furandione and 1-(7-oxabicyclo[2.2.1]hept-2-yl)cyclopentyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

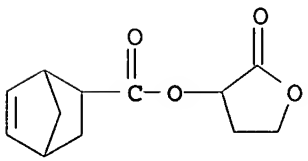
CM 1

CRN 676456-72-7
CMF C15 H22 O3



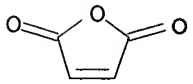
CM 2

CRN 264193-09-1
CMF C12 H14 O4



CM 3

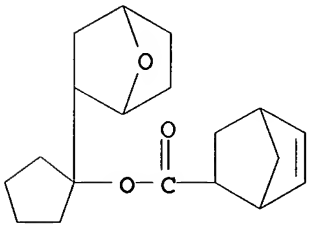
CRN 108-31-6
CMF C4 H2 O3



RN 676456-81-8 HCAPLUS
CN Bicyclo[2.2.1]hept-5-ene-2-carboxylic acid, 1-(7-oxabicyclo[2.2.1]hept-2-yl)cyclopentyl ester, polymer with 2,5-furandione and tetrahydro-2-oxo-3-furanyl bicyclo[2.2.1]hept-5-ene-2-carboxylate (9CI) (CA INDEX NAME)

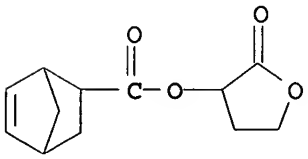
CM 1

CRN 676456-74-9
CMF C19 H26 O3



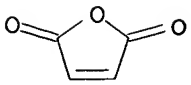
CM 2

CRN 264193-09-1
CMF C12 H14 O4



CM 3

CRN 108-31-6
CMF C4 H2 O3



IC ICM C08F020-30
ICS C08F032-08; G03F007-039
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 35, 38
IT **676456-75-0P** 676456-76-1P **676456-77-2P**
676456-78-3P **676456-79-4P** **676456-80-7P**
676456-81-8P
(ester compds. for polymers and photoresist compns.)

L27 ANSWER 9 OF 33 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2004:77035 HCAPLUS
DOCUMENT NUMBER: 140:136429
TITLE: Positive radiation-sensitive resist compositions with excellent sensitivity, resolution, and adhesion to substrates
INVENTOR(S): Senoo, Masahide; Tamura, Kazutaka; Nio, Hiroyuki
PATENT ASSIGNEE(S): Toray Industries, Inc., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 17 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

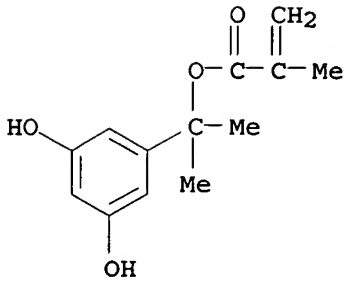
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004029437	A2	20040129	JP 2002-186416	2002 0626

PRIORITY APPLN. INFO.: JP 2002-186416 2002 0626

AB The compns., useful for patterning with electron beams or x-ray beams, contain polymers (A) bearing units becoming alkali soluble by acids, lactone units, and phenolic OH groups and photoacid generators (B).
IT **649758-28-1P**
(chemical amplified pos. resists with good sensitivity to electron beams or x-ray beams, resolution, and adhesion to substrates)
RN 649758-28-1 HCAPLUS
CN 2-Propenoic acid, 2-cyano-, 1,1-diphenylethyl ester, polymer with 1-(3,5-dihydroxyphenyl)-1-methylethyl 2-methyl-2-propenoate and 1-methyl-1-(tetrahydro-2-oxo-3-furanyl)ethyl 2-propenoate (9CI) (CA INDEX NAME)

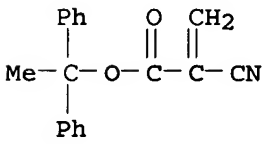
CM 1

CRN 649758-27-0
CMF C13 H16 O4



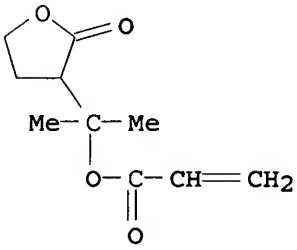
CM 2

CRN 393178-25-1
CMF C18 H15 N O2



CM 3

CRN 239784-43-1
CMF C10 H14 O4



IC ICM G03F007-039
ICS C08F212-14; C08F220-16; C08F220-28; C08F220-30; H01L021-027
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
IT 610271-09-5P 649758-26-9P **649758-28-1P** 649758-30-5P
649758-31-6P 649758-32-7P 649758-33-8P
(chemical amplified pos. resists with good sensitivity to electron beams or x-ray beams, resolution, and adhesion to substrates)

L27 ANSWER 10 OF 33 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2004:5239 HCAPLUS
DOCUMENT NUMBER: 140:67635
TITLE: Photosensitive resin composition
INVENTOR(S): Kanna, Shinichi; Mizutani, Kazuyoshi; Sasaki, Tomoya

PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan
SOURCE: Eur. Pat. Appl., 136 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1376232	A1	20040102	EP 2003-12226	2003 0606
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
JP 2004012898	A2	20040115	JP 2002-167393	2002 0607
JP 2004029111	A2	20040129	JP 2002-181384	2002 0621
JP 2004029136	A2	20040129	JP 2002-181588	2002 0621
US 2004009430	A1	20040115	US 2003-455459	2003 0606
EP 1480079	A2	20041124	EP 2004-19923	2003 0606
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				

PRIORITY APPLN. INFO.:		
JP 2002-167393	A	2002 0607
JP 2002-181384	A	2002 0621
JP 2002-181588	A	2002 0621
EP 2003-12226	A3	2003 0606

AB The photosensitive resin composition of the present invention is an excellent photosensitive resin composition: exhibiting significant transmissibility at the use of an exposure light source of 160 nm or less, more specifically F2 excimer laser light , where line edge roughness and development time dependence are small and a problem of footing formation is improved; and comprising a resin which decomps. by an action of acid to increase the solubility in alkali developer, in which the resin contains a specific repeat unit; a compound capable of generating an acid upon irradiation with one

of an actinic ray and a radiation.

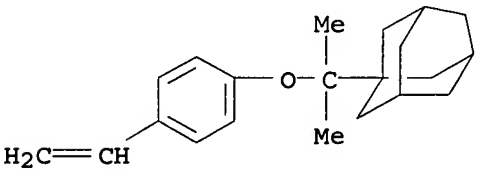
IT **629648-90-4P**
(microlithog. photosensitive resin composition containing)

RN 629648-90-4 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1-methyl-1-(tetrahydro-5-oxo-3-furanyl)ethyl ester, polymer with 4-ethenyl-α-methyl-α-(trifluoromethyl)benzenemethanol and 1-[1-(4-ethenylphenoxy)-1-methylethyl]tricyclo[3.3.1.13,7]decane (9CI) (CA INDEX NAME)

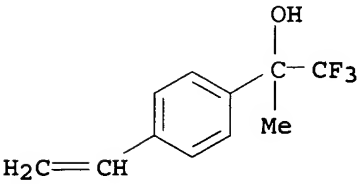
CM 1

CRN 430437-25-5
CMF C21 H28 O



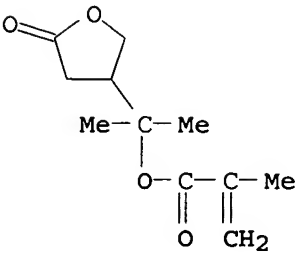
CM 2

CRN 397287-76-2
CMF C11 H11 F3 O



CM 3

CRN 280566-59-8
CMF C11 H16 O4



IC ICM G03F007-039
ICS G03F007-004

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and

Other Reprographic Processes)
Section cross-reference(s): 35, 38, 76

IT 367522-49-4P 370102-83-3P 485390-41-8P 485390-42-9P
485390-43-0P 485390-45-2P 485390-46-3P 485390-47-4P
485390-49-6P 485390-52-1P 485390-57-6P 485390-58-7P
485390-62-3P 485390-65-6P 485390-66-7P 485390-68-9P
485390-69-0P 500212-79-3P 500212-80-6P 518027-87-7P
629648-90-4P 637351-23-6P 637351-25-8P 637351-26-9P
637351-27-0P 637351-28-1P 637351-29-2P 637351-30-5P
637351-31-6P 637351-32-7P 637351-33-8P 637351-35-0P
637351-36-1P 637351-37-2P 637351-38-3P 637351-39-4P
637351-40-7P 637351-41-8P 637351-42-9P 637351-43-0P
637351-44-1P 637351-45-2P 637351-46-3P 637351-47-4P
637351-48-5P 637351-49-6P 637351-51-0P 637351-53-2P
637351-55-4P 637351-57-6P 637351-58-7P
(microlithog. photosensitive resin composition containing)

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L27 ANSWER 11 OF 33 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2003:945845 HCAPLUS
DOCUMENT NUMBER: 140:21261
TITLE: Photosensitive resin composition for photolithography
INVENTOR(S): Kanna, Shinichi; Mizutani, Kazuyoshi; Sasaki, Tomoya
PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 71 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003344994	A2	20031203	JP 2002-154391	2002 0528

PRIORITY APPLN. INFO.: JP 2002-154391 2002 0528

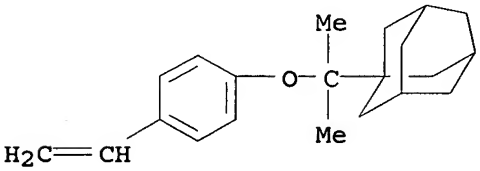
AB The composition contains (A) a polymer with repeating unit R50R51R52CC(OR40)CR53R54R55 [R50-55 = H, F, (substituted) alkyl; ≥1 of R50-55 is F or F-substituted alkyl; R40 = H, (substituted) (cyclo)alkyl, (substituted) acyl, (substituted) alkoxycarbonyl, CR41R42(OR43); R41-42 = H, (substituted) (cyclo)alkyl; R43 = (substituted) (cyclo)alkyl, (substituted) aralkyl, (substituted) aryl; 2 of R41-43 may bond to form a ring], which decomps. by the action of acid and increases its solubility to alkali developer, (B) a compound generating acid by irradiation of actinic ray, and (C) a solvent having ≥1 F in a mol. The composition shows good solvent solubility, coatability, improved line edge roughness, and without striation, and is useful for photolithog. in manufacture of large-scaled integrates, etc.

IT **629648-90-4**
(photoresist composition containing acid-decomposable polymer, acid

generator, and F-containing solvent)
RN 629648-90-4 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 1-methyl-1-(tetrahydro-5-oxo-3-furanyl)ethyl ester, polymer with 4-ethenyl-α-methyl-α-(trifluoromethyl)benzenemethanol and 1-[1-(4-ethenylphenoxy)-1-methylethyl]tricyclo[3.3.1.13,7]decane (9CI) (CA INDEX NAME)

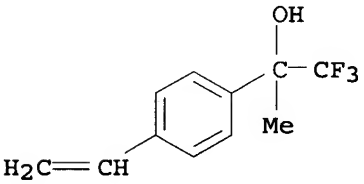
CM 1

CRN 430437-25-5
CMF C21 H28 O



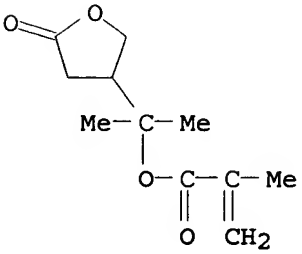
CM 2

CRN 397287-76-2
CMF C11 H11 F3 O



CM 3

CRN 280566-59-8
CMF C11 H16 O4



IC ICM G03F007-004
ICS G03F007-039; H01L021-027
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 38

IT 1511-10-0, Triphenylsulfonium trifluoroacetate 19600-49-8, Triphenylsulfonium acetate 143336-94-1 153698-46-5, Triphenylsulfonium pentafluorobenzenesulfonate 187082-74-2
241806-75-7 338445-29-7 365971-70-6 365971-71-7
367522-49-4 422508-63-2 444617-77-0 444617-78-1
485390-41-8 485390-44-1 485390-45-2 485390-46-3
485390-47-4 485390-49-6 485390-52-1 485390-55-4
485390-58-7 485390-60-1 485390-62-3 485390-63-4
485390-65-6 500212-80-6 500212-90-8 518027-87-7
629648-89-1 **629648-90-4** 629648-92-6 629648-93-7
629648-94-8 629648-95-9 629648-97-1 629648-99-3
629649-01-0 629649-02-1 629649-03-2 629649-04-3
(photoresist composition containing acid-decomposable polymer, acid generator, and F-containing solvent)

L27 ANSWER 12 OF 33 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2003:754897 HCAPLUS
DOCUMENT NUMBER: 139:252537
TITLE: Positive resist composition
INVENTOR(S): Fujimori, Toru
PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan
SOURCE: Eur. Pat. Appl., 89 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

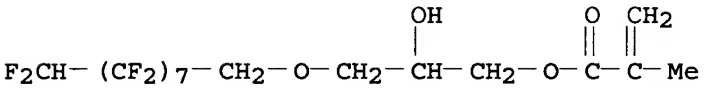
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1347335	A1	20030924	EP 2003-6122	2003 0318
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
JP 2003270791	A2	20030925	JP 2002-74565	2002 0318
US 2003224287	A1	20031204	US 2003-388408	2003 0317
PRIORITY APPLN. INFO.:			JP 2002-74565 A	2002 0318

AB A pos. photoresist composition used in fabrication of semiconductor devices comprises: (A) a compound capable of generating an acid on exposure to active light rays or a radiation; (B) a resin which is insol. or sparingly soluble in an alkali and becomes alkali-soluble by an action of an acid; and (C) an acyclic compound having at least three groups selected from a hydroxyl group and a substituted hydroxyl group.
IT **431062-22-5P**
(pos. photoresist composition containing)
RN 431062-22-5 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 3-[(2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9-hexadecafluorononyl)oxy]-2-hydroxypropyl ester, polymer with 1-methyl-1-(tetrahydro-5-oxo-3-furanyl)ethyl 2-methyl-2-

propenoate, 2-methyltricyclo[3.3.1.13,7]dec-2-yl 2-methyl-2-propenoate and 5(or 6)-[3,3,3-trifluoro-2-[(tetrahydro-2H-pyran-2-yl)oxy]-2-(trifluoromethyl)propyl]bicyclo[2.2.1]hept-2-yl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

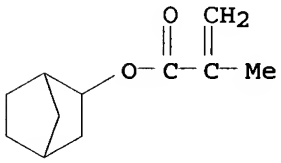
CM 1

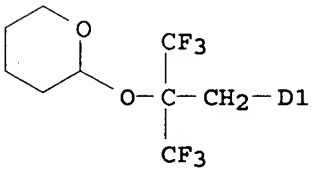
CRN 431062-21-4
CMF C16 H14 F16 O4



CM 2

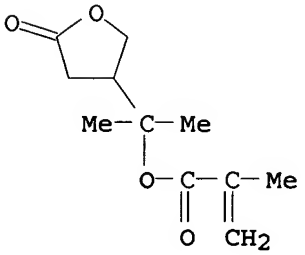
CRN 431062-13-4
CMF C20 H26 F6 O4
CCI IDS





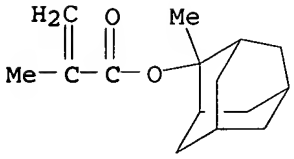
CM 3

CRN 280566-59-8
CMF C11 H16 O4



CM 4

CRN 177080-67-0
CMF C15 H22 O2



IC ICM G03F007-039
ICS G03F007-004
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 35, 38
IT 109-92-2DP, Ethyl vinyl ether, reaction product with polyhydroxystyrene 24979-70-2DP, VP15000, reaction product with alkyl vinyl ether 159296-87-4P 200808-68-0P 250378-10-0P, Butyrolactone methacrylate-2-ethyl-2-adamantyl methacrylate copolymer 262617-13-0P 288303-55-9P 325143-38-2P
364736-22-1P 391232-36-3P 398140-43-7P 398140-45-9P
398140-47-1P 398140-50-6P 398140-52-8P 398140-55-1P
398140-57-3P 398140-59-5P 398140-64-2P 398140-69-7P
398140-73-3P 398140-77-7P 398140-78-8P 398140-79-9P
398140-81-3P 398140-88-0P, tert-Butyl norbornenecarboxylate-maleic anhydride-2-methyl-2-adamantyl acrylate-norbornene lactone acrylate copolymer 398140-89-1P 398140-94-8P 398141-00-9P
398141-11-2P 398141-13-4P 398141-14-5P 405509-18-4P
430436-66-1P 430436-67-2P 430436-68-3P 430436-70-7P
430436-72-9P 430436-74-1P 430436-76-3P 430436-78-5P
430436-79-6P 430436-81-0P 430436-82-1P 430436-84-3P
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431062-14-5P 431062-16-7P 431062-17-8P 431062-18-9P
431062-20-3P **431062-22-5P** 462109-80-4P 471257-28-0P
503003-64-3P 597553-03-2P 597553-04-3P
(pos. photoresist composition containing)
REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L27 ANSWER 13 OF 33 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2003:735196 HCAPLUS
DOCUMENT NUMBER: 139:267983
TITLE: Positive-working photoresist composition containing polymer with fluoro-aliphatic group
INVENTOR(S): Fujimori, Toru
PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 88 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent

LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003262952	A2	20030919	JP 2002-65444	2002 0311

PRIORITY APPLN. INFO.: JP 2002-65444 2002 0311

AB The composition contains (A) a compound generating an acid by irradiation of actinic ray, (B) a resin which decomps. by the action of an acid and whose solubility in alkaline developer increases, and (C) a polymer with fluoro-aliphatic group formed from a monomer CH2:CR1COX(CH2)m(CF2CF2)nF (R1 = H, Me; X = O, S, NR2; m = 1-6; n = 2-4; R2 = H, C1-4 alkyl). Developing defect is prevented and the composition is useful for manufacture of integrated circuits, semiconductor device, and wiring substrates.

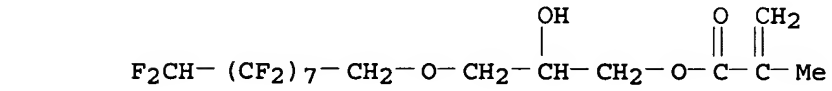
IT **431062-22-5P**
(pos. photoresist composition containing polymer with fluoro-aliphatic group)

RN 431062-22-5 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 3-[(2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9-hexadecafluorononyl)oxy]-2-hydroxypropyl ester, polymer with 1-methyl-1-(tetrahydro-5-oxo-3-furanyl)ethyl 2-methyl-2-propenoate, 2-methyltricyclo[3.3.1.13,7]dec-2-yl 2-methyl-2-propenoate and 5(or 6)-[3,3,3-trifluoro-2-[(tetrahydro-2H-pyran-2-yl)oxy]-2-(trifluoromethyl)propyl]bicyclo[2.2.1]hept-2-yl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

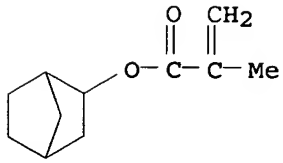
CM 1

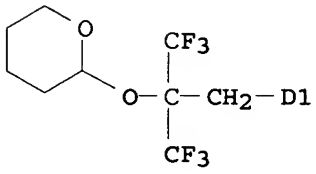
CRN 431062-21-4
CMF C16 H14 F16 O4



CM 2

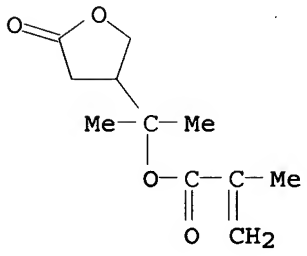
CRN 431062-13-4
CMF C20 H26 F6 O4
CCI IDS





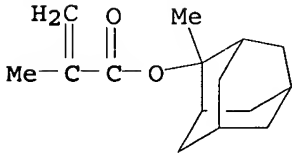
CM 3

CRN 280566-59-8
CMF C11 H16 O4



CM 4

CRN 177080-67-0
CMF C15 H22 O2



IC ICM G03F007-004
ICS C08F020-22; C08F020-38; C08F020-54; C08F020-68; C08F020-70; G03F007-033; G03F007-039; H01L021-027

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 38

IT 250378-10-0P, Butyrolactone methacrylate-2-ethyl-2-adamantyl methacrylate copolymer 262617-13-0P 328061-11-6P 350992-58-4P 351197-82-5P 359635-35-1P 364736-22-1P

367283-78-1P 391232-36-3P 398140-38-0P 398140-43-7P
398140-45-9P 398140-57-3P 398140-64-2P 398140-69-7P
398140-79-9P 398140-86-8P 398140-87-9P 398140-88-0P
398140-89-1P 398141-00-9P 398141-11-2P 398141-14-5P
430436-66-1P 430436-67-2P 430436-68-3P 430436-70-7P
430436-72-9P 430436-74-1P 430436-76-3P 430436-78-5P
430436-79-6P 430436-81-0P 430436-82-1P 430436-84-3P
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430436-90-1P 430436-91-2P 430436-92-3P 430436-94-5P
430436-95-6P 430436-97-8P 430436-98-9P 430436-99-0P
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430437-13-1P 430437-14-2P 430437-15-3P 430437-17-5P
430437-18-6P 430437-19-7P 430437-21-1P 430437-22-2P
430437-24-4P 431062-12-3P 431062-14-5P 431062-16-7P
431062-17-8P 431062-18-9P 431062-20-3P **431062-22-5P**
482609-97-2P 503003-64-3P 524699-47-6P 532989-17-6P
601490-00-0P 601490-01-1P 601490-02-2P 601490-03-3P
(pos. photoresist composition containing polymer with fluoro-aliphatic group)

L27 ANSWER 14 OF 33 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2003:470377 HCAPLUS
DOCUMENT NUMBER: 139:44224
TITLE: Positive-working resist composition containing specific fluorine group-containing resin
INVENTOR(S): Kanna, Shinichi; Mizutani, Kazuyoshi; Kodama, Kunihiko; Sasaki, Tomoya
PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan
SOURCE: Eur. Pat. Appl., 80 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1319981	A2	20030618	EP 2002-27667	2002 1212
EP 1319981	A3	20030723		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK				
US 2003194650	A1	20031016	US 2002-317110	2002 1212
JP 2003241386	A2	20030827	JP 2002-362629	2002 1213
PRIORITY APPLN. INFO.:			JP 2001-380104 A	2001 1213
			JP 2001-380105 A	2001 1213

AB The invention relates to a pos. resist composition comprising (A) a fluorine group-containing resin, which has a structure substituted with a fluorine atom in the main chain and/or side chain of polymer skeleton and a group that is decomposed by the action of an acid to increase solubility in an alkali developer and (B) an acid generator capable of generating an acid upon irradiation of an actinic ray or radiation, and the acid generator of (B) is a compound selected from a sulfonium salt containing no aromatic ring and a compound having a phenacylsulfonium salt structure. The composition is capable of forming a highly precise pattern using a vacuum UV ray of ≤160 nm such as F2 excimer laser beam as a light source for exposure.

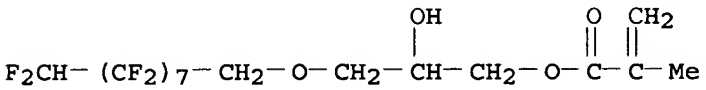
IT **431062-22-5P**
(fluorine group-containing resin)

RN 431062-22-5 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 3-[(2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9-hexadecafluorononyl)oxy]-2-hydroxypropyl ester, polymer with 1-methyl-1-(tetrahydro-5-oxo-3-furanyl)ethyl 2-methyl-2-propenoate, 2-methyltricyclo[3.3.1.13,7]dec-2-yl 2-methyl-2-propenoate and 5(or 6)-[3,3,3-trifluoro-2-[(tetrahydro-2H-pyran-2-yl)oxy]-2-(trifluoromethyl)propyl]bicyclo[2.2.1]hept-2-yl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

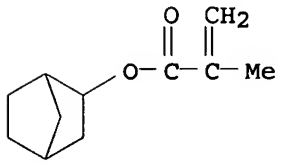
CM 1

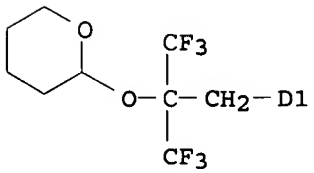
CRN 431062-21-4
CMF C16 H14 F16 O4



CM 2

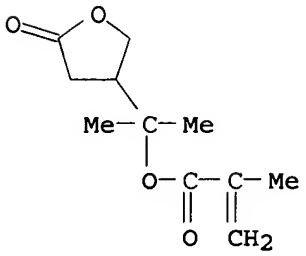
CRN 431062-13-4
CMF C20 H26 F6 O4
CCI IDS





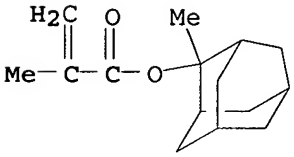
CM 3

CRN 280566-59-8
CMF C11 H16 O4



CM 4

CRN 177080-67-0
CMF C15 H22 O2



IC ICM G03F007-004
ICS G03F007-039
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 35
IT 262617-13-0P 430436-66-1P 430436-68-3P 430436-72-9P
430436-74-1P 430436-76-3P 430436-78-5P 430436-79-6P
430436-81-0P 430436-84-3P 430436-85-4P 430436-87-6P
430436-90-1P 430436-92-3P 430436-94-5P 430436-99-0P
430437-03-9P 430437-07-3P 430437-12-0P 430437-13-1P
430437-14-2P 430437-15-3P 430437-17-5P 430437-18-6P
430437-19-7P 430437-21-1P 430437-22-2P 430437-29-9P
430437-33-5P 430437-35-7P 430437-40-4P 431062-12-3P
431062-17-8P **431062-22-5P** 462109-80-4P 485390-42-9P
540729-50-8P 540729-51-9P 540729-52-0P 540729-54-2P
540729-55-3P
(fluorine group-containing resin)

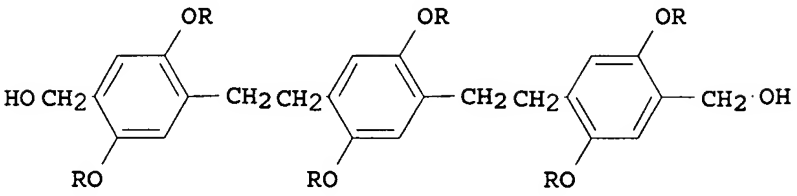
L27 ANSWER 15 OF 33 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2003:371833 HCAPLUS
DOCUMENT NUMBER: 138:376421
TITLE: Chemically amplified positive resists forming defect-free patterns by deep-UV lithography using F2 excimer lasers
INVENTOR(S): Fujimori, Toru; Kanna, Shinichi
PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 55 pp.
CODEN: JKXXAF

DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003140345	A2	20030514	JP 2001-338103	2001 1102

PRIORITY APPLN. INFO.: JP 2001-338103 2001 1102

GI



I

AB The resists comprise acid-labile F-containing resins, radiation-sensitive acid generators, and F-containing compds.

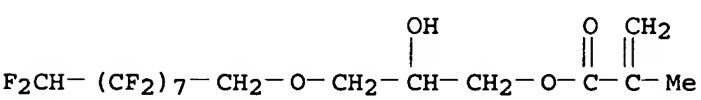
IT **431062-22-5**
(chemical amplified pos. resists containing F-substituted acid-labile polymers and F compds. for deep-UV lithog.)

RN 431062-22-5 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 3-[(2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9-hexadecafluorononyl)oxy]-2-hydroxypropyl ester, polymer with 1-methyl-1-(tetrahydro-5-oxo-3-furanyl)ethyl 2-methyl-2-propenoate, 2-methyltricyclo[3.3.1.13,7]dec-2-yl 2-methyl-2-propenoate and 5(or 6)-[3,3,3-trifluoro-2-[(tetrahydro-2H-pyran-2-yl)oxy]-2-(trifluoromethyl)propyl]bicyclo[2.2.1]hept-2-yl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

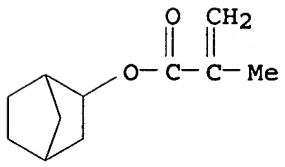
CRN 431062-21-4
CMF C16 H14 F16 O4

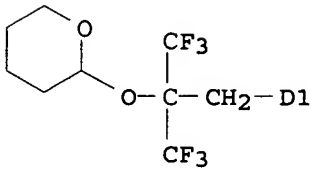


CM 2

CRN 431062-13-4
CMF C20 H26 F6 O4

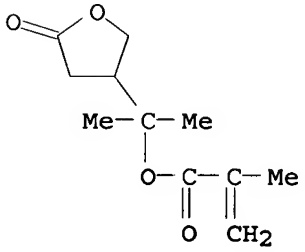
CCI IDS





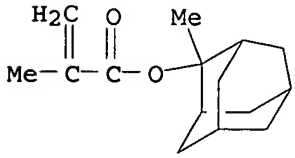
CM 3

CRN 280566-59-8
CMF C11 H16 O4



CM 4

CRN 177080-67-0
CMF C15 H22 O2



IC ICM G03F007-039
ICS G03F007-004; H01L021-027
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 38
IT 430436-67-2 430436-84-3 430436-85-4 430436-89-8
430436-90-1 431062-14-5 431062-16-7 431062-18-9

431062-20-3 **431062-22-5**
(chemical amplified pos. resists containing F-substituted acid-labile polymers and F compds. for deep-UV lithog.)

L27 ANSWER 16 OF 33 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2003:369197 HCAPLUS
DOCUMENT NUMBER: 138:393073
TITLE: Positive-working photoresist composition containing fluoro-substituted nitrogen compound
INVENTOR(S): Fujimori, Toru; Kanna, Shinichi
PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 53 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003140349	A2	20030514	JP 2001-339439	2001 1105

PRIORITY APPLN. INFO.: JP 2001-339439 2001 1105

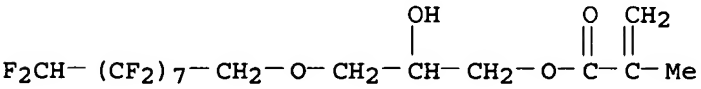
AB The composition contains (A) a polymer with F-substituted main chain or side chain and becomes soluble in alkaline developer by the decomposition caused by an acid, (B) a compound generating acid by actinic ray or radiation, and (C) a nitrogen compound containing ≥1 F atom. The composition gives clear pattern without development defect.

IT **431062-22-5P**
(pos. photoresist containing F-containing alkali-soluble polymer, acid generator, and F-containing nitrogen compound)

RN 431062-22-5 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 3-[(2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9-hexadecafluorononyl)oxy]-2-hydroxypropyl ester, polymer with 1-methyl-1-(tetrahydro-5-oxo-3-furanyl)ethyl 2-methyl-2-propenoate, 2-methyltricyclo[3.3.1.13,7]dec-2-yl 2-methyl-2-propenoate and 5(or 6)-[3,3,3-trifluoro-2-[(tetrahydro-2H-pyran-2-yl)oxy]-2-(trifluoromethyl)propyl]bicyclo[2.2.1]hept-2-yl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

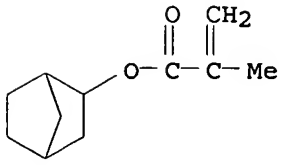
CM 1

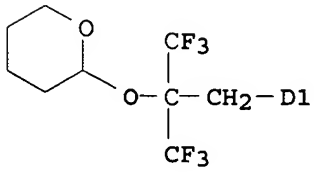
CRN 431062-21-4
CMF C16 H14 F16 O4



CM 2

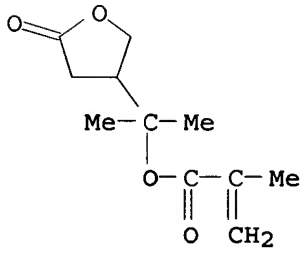
CRN 431062-13-4
CMF C20 H26 F6 O4
CCI IDS





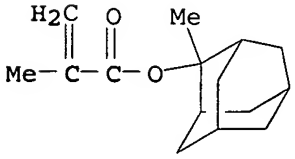
CM 3

CRN 280566-59-8
CMF C11 H16 O4



CM 4

CRN 177080-67-0
CMF C15 H22 O2



IC ICM G03F007-039
ICS C08F012-22; C08F014-26; C08F014-28; C08F016-26; C08F016-38; C08F020-22; C08F020-28; C08F020-44; C08F032-04; G03F007-004; H01L021-027
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and

Other Reprographic Processes)
Section cross-reference(s): 38

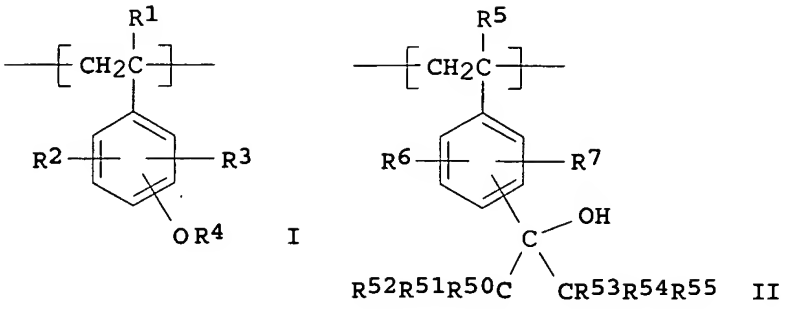
IT 143643-34-9P 262617-13-0P 370866-13-0P 370866-15-2P
397302-29-3P 430436-67-2P 430436-68-3P 430436-70-7P
430436-72-9P 430436-74-1P 430436-76-3P 430436-78-5P
430436-79-6P 430436-81-0P 430436-82-1P 430436-84-3P
430436-85-4P 430436-86-5P 430436-87-6P 430436-89-8P
430436-90-1P 430436-92-3P 430436-94-5P 430436-98-9P
430436-99-0P 430437-01-7P 430437-03-9P 430437-04-0P
430437-05-1P 430437-09-5P 430437-11-9P 430437-12-0P
430437-13-1P 430437-17-5P 430437-18-6P 430437-19-7P
430437-21-1P 430437-22-2P 430437-24-4P 430437-27-7P
430437-29-9P 430437-33-5P 430437-36-8P 430437-37-9P
430437-39-1P 430437-40-4P 431062-12-3P 431062-14-5P
431062-16-7P 431062-17-8P 431062-18-9P 431062-20-3P
431062-22-5P 487048-93-1P 524952-65-6P 524952-66-7P
524952-68-9P 524952-69-0P 524952-70-3P 524952-71-4P
524952-72-5P 524952-73-6P 524952-74-7P
(pos. photoresist containing F-containing alkali-soluble polymer, acid generator, and F-containing nitrogen compound)

L27 ANSWER 17 OF 33 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2003:152372 HCAPLUS
DOCUMENT NUMBER: 138:212786
TITLE: Vacuum UV-sensitive resin composition containing ionic compound reactive towards acid
INVENTOR(S): Kanna, Shinichi; Mizutani, Kazuyoshi
PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 66 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003057826	A2	20030228	JP 2001-250535	2001 0821

PRIORITY APPLN. INFO.: JP 2001-250535 2001 0821

GI



I II

AB The title composition contains a resin which increases the solubility towards an alkali developer by an acid and has repeating unit I, II, and [CH(R17a)-C(R17)(COOR18)] (R1,5,R17, R17a = H, halo, cyano, alkyl; R2,3,6,7 = H, halo, cyano, hydroxyl, etc.; R50-55 = H, F, alkyl; R4 = -C(R11)(R12)(R13), -C(R14)(R15)(-O-R16); R11-13 = alkyl, cycloalkyl, alkenyl, etc.; R14-15 = H, alkyl; R16 = alkyl, cycloalkyl, aralkyl, aryl; R18 = -C(R18d)(R18e)(R18f), -C(R18d)(R18e)(OR18g); R18d-g = H, alkyl, aralkyl, aryl), an actinic ray- or radiation-sensitive acid generator, ionic compound B+A2- (A2= anionic part; B = cationic part), a solvent, and a surfactant, wherein the acid (A1H) generated by an acid generator and the ionic compound follow the reaction equation: A1H + B+A2--> B+A2- + A2H. The composition shows the good light transmittance towards ≤160 nm light and the decreased dependence on the exposure time and provides the resist of the good line edge roughness.

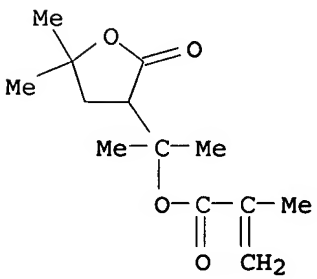
IT **500212-82-8P**
(resin; Vacuum UV-sensitive resin composition containing ionic compound reactive towards acid)

RN 500212-82-8 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1-methyl-1-(tetrahydro-5,5-dimethyl-2-oxo-3-furanyl)ethyl ester, polymer with α-(difluoromethyl)-4-ethenyl-α-(trifluoromethyl)benzenemethanol and 1-[1-(4-ethenylphenoxy)-1-methylethyl]tricyclo[3.3.1.13,7]decane (9CI) (CA INDEX NAME)

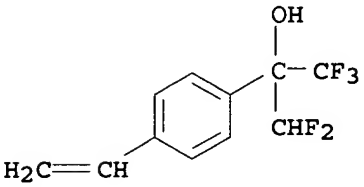
CM 1

CRN 500212-81-7
CMF C13 H20 O4



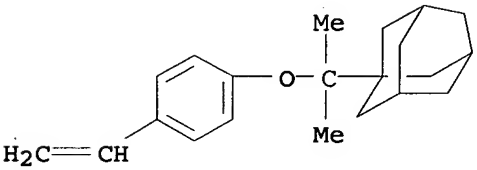
CM 2

CRN 485390-53-2
CMF C11 H9 F5 O



CM 3

CRN 430437-25-5
CMF C21 H28 O



IC ICM G03F007-039
ICS C08F212-14; G03F007-004; H01L021-027
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 35
IT 485390-41-8P 485390-42-9P 485390-43-0P 485390-45-2P
485390-46-3P 485390-47-4P 485390-49-6P 485390-52-1P
485390-55-4P 485390-56-5P 485390-57-6P 485390-58-7P
485390-60-1P 485390-62-3P 485390-63-4P 485390-64-5P
485390-65-6P 485390-66-7P 485390-67-8P 485390-69-0P
485390-70-3P 500212-79-3P 500212-80-6P **500212-82-8P**
500212-84-0P 500212-86-2P 500212-87-3P 500212-88-4P
(resin; Vacuum UV-sensitive resin composition containing ionic compound reactive towards acid)

L27 ANSWER 18 OF 33 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2003:56212 HCAPLUS
DOCUMENT NUMBER: 138:115060
TITLE: Cycloalkenyl epoxy compounds, their polymers, positive photoresists containing them with high resolution and good adhesion to substrates, and photolithography using them
INVENTOR(S): Hasegawa, Koji; Kaneo, Takeshi; Watanabe, Takeshi
PATENT ASSIGNEE(S): Shin-Etsu Chemical Industry Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 37 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1

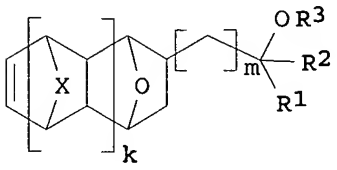
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003020313	A2	20030124	JP 2001-207289	20010709
US 2003050398	A1	20030313	US 2002-189706	20020703
US 2005142491	A1	20050630	US 2005-57008	20050211

PRIORITY APPLN. INFO.:	JP 2001-207289	A	20010709
	US 2002-189706	A3	20020703

OTHER SOURCE(S): MARPAT 138:115060

GI



I

AB The invention relates to epoxy compds. I (R1, R2 = H, C1-10-alkyl, etc.; R3 = C1-10-alkyl, C1-15-acyl, C1-15-alkoxycarbonyl, etc.; X = CH2, O, S; k = 0, 1; m = 0-5). The photoresists are sensitive to ArF excimer laser beams.

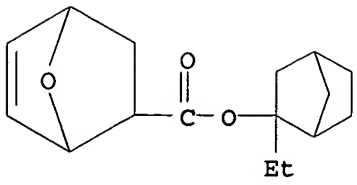
IT **488720-38-3P 488720-40-7P**
(cycloalkenyl epoxide polymers for ArF laser-sensitive high-resolution pos. photoresists with good adhesion to substrates)

RN 488720-38-3 HCAPLUS

CN 7-Oxabicyclo[2.2.1]hept-5-ene-2-carboxylic acid, 2-ethylbicyclo[2.2.1]hept-2-yl ester, polymer with (α,α-dimethyl-7-oxabicyclo[2.2.1]hept-5-en-2-yl)methyl acetate and 2,5-furandione (9CI) (CA INDEX NAME)

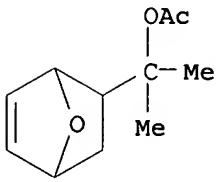
CM 1

CRN 488720-34-9
CMF C16 H22 O3



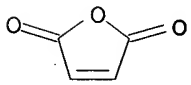
CM 2

CRN 488720-33-8
CMF C11 H16 O3



CM 3

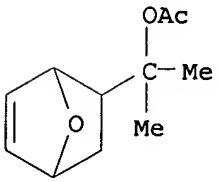
CRN 108-31-6
CMF C4 H2 O3



RN 488720-40-7 HCAPLUS
CN 2-Propenoic acid, 2-ethyltricyclo[3.3.1.13,7]dec-2-yl ester, polymer with (α,α-dimethyl-7-oxabicyclo[2.2.1]hept-5-en-2-yl)methyl acetate and 2,5-furandione (9CI) (CA INDEX NAME)

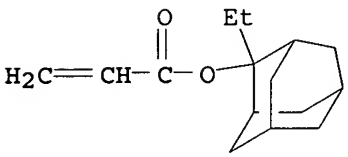
CM 1

CRN 488720-33-8
CMF C11 H16 O3



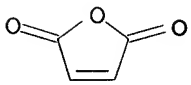
CM 2

CRN 303186-14-3
CMF C15 H22 O2



CM 3

CRN 108-31-6
CMF C4 H2 O3



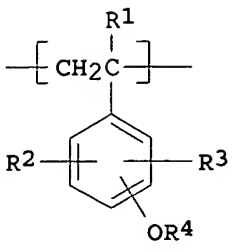
IC ICM C08F034-00
ICS C08G061-12; G03F007-039
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
IT 488720-35-0P 488720-36-1P 488720-37-2P **488720-38-3P**
488720-39-4P **488720-40-7P** 488720-41-8P 488720-43-0P
(cycloalkenyl epoxide polymers for ArF laser-sensitive high-resolution pos. photoresists with good adhesion to substrates)

L27 ANSWER 19 OF 33 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2003:35187 HCAPLUS
DOCUMENT NUMBER: 138:98199
TITLE: Positive-working vacuum UV-sensitive photoresist material composition containing specific resin
INVENTOR(S): Kanna, Shinichi; Mizutani, Kazuyoshi
PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 39 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

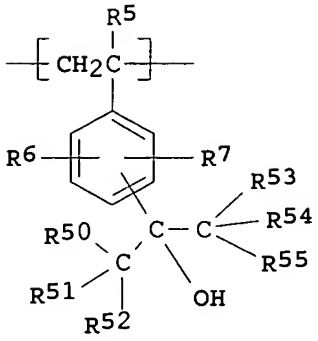
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003015298	A2	20030115	JP 2001-202241	20010703

PRIORITY APPLN. INFO.: JP 2001-202241 20010703

GI



I



II

AB The title composition contains a resin increasing solubility toward an alkali solution by an acid, a photoacid generator, and a solvent, wherein the resin contains repeating unit I, II, and [-CH(R17a)-C(R17)(COOR18)-](R1,5,17a,17 = H, halo, cyano, alkyl; R2,3,6,7 = H, halo, cyano, hydroxyl, etc.; R50-55 = H, F, alkyl; R4 = -C(R11)(R12)(R13), -C(R14)(R15)(-O-R16); R18 = -C(R18d)(R18e)(R18f), -C(R18d)(R18e)-O-(R18g); R11-13 = alkyl, cycloalkyl, alkenyl, aralkyl, aryl; R14-15 = H, alkyl; R16 = alkyl, cycloalkyl, aralkyl, aryl). The composition provides the good transparency towards vacuum UV and provides the good solubility contrast towards developers.

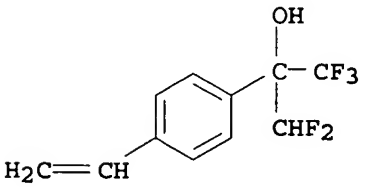
IT **485390-54-3P**
(resin; pos.-working vacuum UV-sensitive photoresist material composition containing specific resin)

RN 485390-54-3 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1-methyl-1-(tetrahydro-5-oxo-3-furanyl)ethyl ester, polymer with α-(difluoromethyl)-4-ethenyl-α-(trifluoromethyl)benzenemethanol and 1-[1-(4-ethenylphenoxy)-1-methylethyl]tricyclo[3.3.1.13,7]decane (9CI) (CA INDEX NAME)

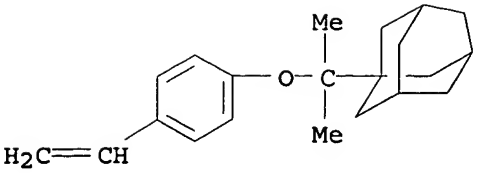
CM 1

CRN 485390-53-2
CMF C11 H9 F5 O



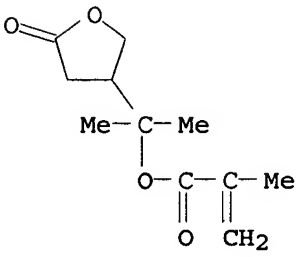
CM 2

CRN 430437-25-5
CMF C21 H28 O



CM 3

CRN 280566-59-8
CMF C11 H16 O4



IC ICM G03F007-039
ICS C08F212-14; C08F220-18; H01L021-027
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 35
IT 485390-41-8P 485390-42-9P 485390-43-0P 485390-44-1P
485390-45-2P 485390-46-3P 485390-47-4P 485390-49-6P
485390-51-0P 485390-52-1P **485390-54-3P** 485390-55-4P
485390-56-5P 485390-57-6P 485390-58-7P 485390-60-1P
485390-62-3P 485390-63-4P 485390-64-5P 485390-65-6P
485390-66-7P 485390-67-8P 485390-68-9P 485390-69-0P
485390-70-3P 485390-72-5P 485390-73-6P 485390-76-9P
(resin; pos.-working vacuum UV-sensitive photoresist material composition containing specific resin)

L27 ANSWER 20 OF 33 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2002:976089 HCAPLUS
DOCUMENT NUMBER: 138:47317
TITLE: Positive radiation-sensitive resist compositions having high sensitivity and high resolution and their sub-quarter-micron lithography
INVENTOR(S): Nio, Hiroyuki; Tamura, Kazutaka; Senoo, Masahide
PATENT ASSIGNEE(S): Toray Industries, Inc., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 14 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE

JP 2002372785	A2	20021226	JP 2002-103440	2002 0405
PRIORITY APPLN. INFO.:			JP 2001-113820	A 2001 0412

AB The resist compns., useful for patterning with electron beam, contain (a) as acid-labile alkali-developable binders, polymers containing structure units bearing lactone residues and structure units bearing aromatic rings and (b) radiation-sensitive acid generators. Thus, a resist composition comprising 3 g α-methacryloyloxypantolactone-2-phenylpropyl methacrylate copolymer (reaction ratio 5.9:4) with Mw 33,000, 300 mg triphenylsulfonium triflate, and Me Cellosolve acetate was spin-coated on a HMDS-treated Si wafer, heated at 100° for 2 min to give a 0.5-μm thick layer, subjected to patternwise exposure to electron beam, and developed with 2.38% Me4NOH to give 0.20-μm width patterns (exposure 2.2 μC/cm2).

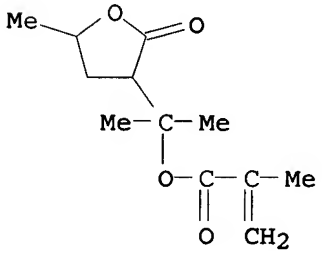
IT **478866-28-3P**
(pos. electron-beam resist compns. and their sub-quarter-micron lithog.)

RN 478866-28-3 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1-methyl-1-phenylethyl ester, polymer with 1-methyl-1-(tetrahydro-5-methyl-2-oxo-3-furanyl)ethyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

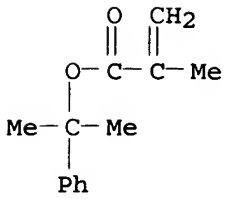
CM 1

CRN 478866-27-2
CMF C12 H18 O4



CM 2

CRN 54554-17-5
CMF C13 H16 O2



IC ICM G03F007-039
ICS C08F020-10; C08F020-42; C08F212-04; C08F214-00; H01L021-027
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
IT 478866-24-9P 478866-25-0P, α-Methacryloyloxy-γ-butyrolactone-p-tetrahydropyranyloxystyrene copolymer 478866-26-1P **478866-28-3P** 478866-29-4P 478866-30-7P 478866-31-8P 478866-32-9P, 1,1-Diphenylethyl methacrylate-β-methacryloyloxymevalolactone copolymer 478866-33-0P, 1,1-Diphenylethyl acrylate-α-methacryloyloxy-γ-butyrolactone copolymer 478866-34-1P, 1,1-Diphenylethyl methacrylate-α-methacryloyloxy-γ-butyrolactone copolymer
(pos. electron-beam resist compns. and their sub-quarter-micron lithog.)

L27 ANSWER 21 OF 33 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2002:769998 HCAPLUS
DOCUMENT NUMBER: 137:302221
TITLE: Deep-UV positive-working photoresist composition showing improved contact hole resolution and sidelobe suppression
INVENTOR(S): Sato, Kenichiro
PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 77 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002296782	A2	20021009	JP 2001-101521	2001 0330

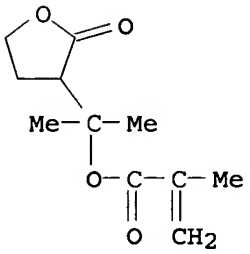
PRIORITY APPLN. INFO.: JP 2001-101521 2001 0330

AB The title pos.-working photoresist composition comprises (A) an acid-decomposable resin comprised of an aliphatic cyclic hydrocarbon structural repeating unit and a crosslinking structural repeating unit -OC(R1)(R2)O- [R1, R2 = H, C1-4-alkyl], and (B) a photoacid generator. The photoresist composition is especially suitable for the photolithog. with the 193 nm ArF excimer laser.
IT **469880-24-8P**
(deep-UV pos.-working photoresist composition showing improved contact hole resolution and side-lobe suppression)

RN 469880-24-8 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, hexahydro-2-oxo-3,5-methano-2H-cyclopenta[b]furan-6-yl ester, polymer with ethylidenebis(oxy-2,1-ethanediyl) di-2-propenoate, 1-methyl-1-(tetrahydro-2-oxo-3-furanyl)ethyl 2-methyl-2-propenoate and 2-methyltricyclo[3.3.1.13,7]dec-2-yl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

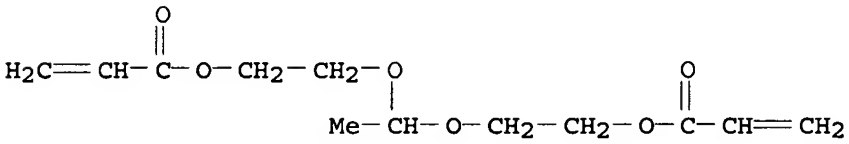
CM 1

CRN 469880-23-7
CMF C11 H16 O4



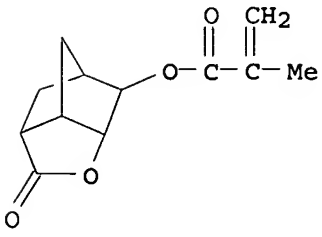
CM 2

CRN 403498-97-5
CMF C12 H18 O6



CM 3

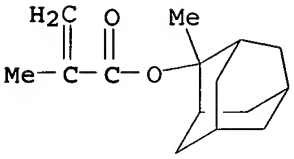
CRN 254900-07-7
CMF C12 H14 O4



CM 4

CRN 177080-67-0

CMF C15 H22 O2



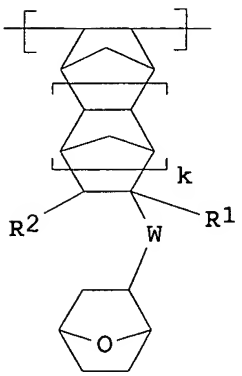
IC ICM G03F007-039
ICS C08K005-00; C08L101-12; H01L021-027
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 38, 76
IT 469880-22-6P **469880-24-8P** 469880-26-0P 469880-27-1P
469880-29-3P 469880-31-7P 469880-32-8P 469880-34-0P
469880-35-1P 469880-36-2P 469880-38-4P 469880-40-8P
469880-41-9P 469880-42-0P 469880-43-1P 469880-45-3P
469880-47-5P 469880-49-7P 469880-50-0P 469880-51-1P
469880-53-3P
(deep-UV pos.-working photoresist composition showing improved contact hole resolution and side-lobe suppression)

L27 ANSWER 22 OF 33 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2002:716915 HCAPLUS
DOCUMENT NUMBER: 137:270511
TITLE: Polymers, resist materials, and pattern formation method
INVENTOR(S): Nishi, Tsunehiro; Hasegawa, Koji; Nakashima, Mutsuo
PATENT ASSIGNEE(S): Shin-Etsu Chemical Co., Ltd., Japan
SOURCE: U.S. Pat. Appl. Publ., 37 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

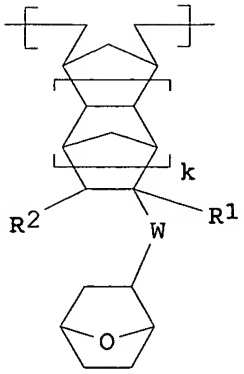
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2002132182	A1	20020919	US 2002-50478	2002 0116
US 6677101	B2	20040113		
TW 550275	B	20030901	TW 2002-91100626	2002 0116
JP 2002303985	A2	20021018	JP 2002-8244	2002 0117

PRIORITY APPLN. INFO.: JP 2001-8613 A 2001 0117

GI



I



II

AB The present invention provides (1) a polymer which has excellent reactivity, rigidity and adhesion to the substrate, and undergoes a low degree of swelling during development, (2) a resist material which uses this polymer as the base resin and hence exhibits much higher resolving power and etching resistance than conventional resist materials, and (3) a pattern formation method using this resist material. Specifically, the present invention provides a novel polymer containing repeating units represented by I, II (R1 = H, Me, CH2CO2R3; R2= H, Me, CO2R3; R3 = C1-15 alkyl; W = C2-20 divalent hydrocarbon radical, which may have ≥ 1 ester linkage in its structure and may further be substituted by one or more other atomic group containing a heteroatom; k = 0,1) and having a weight-average mol. weight of 1,000-500,000, a resist material using the polymer as a base resin, and a pattern formation method using the resist material.

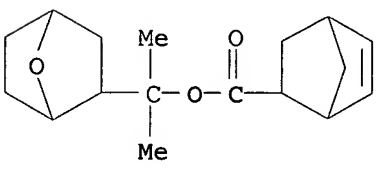
IT **461671-55-6P**
(polymers, photoresist materials, and pattern formation method)

RN 461671-55-6 HCAPLUS

CN Bicyclo[2.2.1]hept-5-ene-2-carboxylic acid, 2-ethylbicyclo[2.2.1]hept-2-yl ester, polymer with 2,5-furandione and 1-methyl-1-(7-oxabicyclo[2.2.1]hept-2-yl)ethyl bicyclo[2.2.1]hept-5-ene-2-carboxylate (9CI) (CA INDEX NAME)

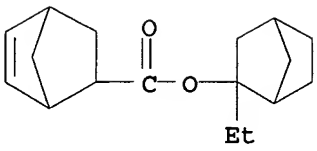
CM 1

CRN 461671-54-5
CMF C17 H24 O3



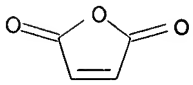
CM 2

CRN 330596-01-5
CMF C17 H24 O2



CM 3

CRN 108-31-6
CMF C4 H2 O3



IC ICM G03F007-039
ICS G03F007-38; G03F007-40
INCL 430270100
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 35, 38
IT 461671-53-4P **461671-55-6P** 461671-57-8P 461671-59-0P
461671-60-3P 461671-61-4P 461671-62-5P 461671-63-6P
461671-64-7P 461671-65-8P 461671-66-9P 461671-68-1P
(polymers, photoresist materials, and pattern formation method)
REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

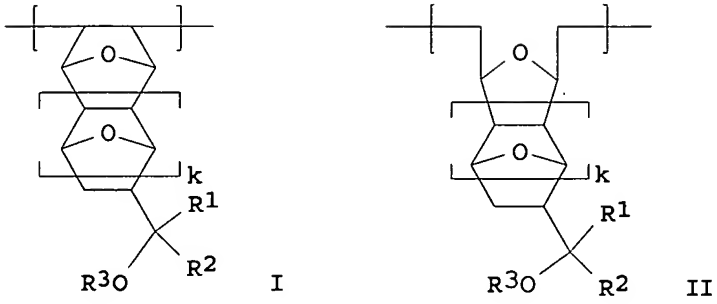
L27 ANSWER 23 OF 33 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2002:575607 HCAPLUS
DOCUMENT NUMBER: 137:132115
TITLE: Polymer, resist composition and patterning process
INVENTOR(S): Nishi, Tsunehiro; Nakashima, Mutsuo; Kobayashi, Tomohiro
PATENT ASSIGNEE(S): Shin-Etsu Chemical Co., Ltd., Japan
SOURCE: U.S. Pat. Appl. Publ., 35 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2002102493	A1	20020801	US 2001-221	2001 1204
US 6670094	B2	20031230		
JP 2002234913	A2	20020823	JP 2001-363803	2001 1129

TW 527523 B 20030411 TW 2001-90129860
2001
1203

PRIORITY APPLN. INFO.: JP 2000-368672 A
2000
1204

GI



I II

AB The present invention relates to a polymer comprising recurring units of I, II (R1,2 = H, C1-15 alkyl, R1,2 taken together, may form a ring; R3 = H, C1-15 alkyl, acyl or alkylsulfonyl or C2-15 alkoxycarbonyl or alkoxyalkyl which may have halogen substituents; not all R1-3 are hydrogen; k = 0 or 1) and having a Mw of 1,000-500,000.. The present invention relates to a photoresist composition comprising the polymer as a base resin which is sensitive to high-energy radiation, has excellent sensitivity, resolution, etching resistance, and minimized swell and lends itself to micropatterning with electron beams or deep-UV.

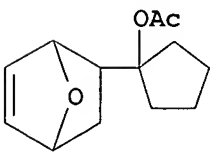
IT **444045-74-3P**
(polymer photoresist composition for patterning process)

RN 444045-74-3 HCAPLUS

CN Bicyclo[2.2.1]hept-5-ene-2-carboxylic acid, 2-ethylbicyclo[2.2.1]hept-2-yl ester, polymer with 2,5-furandione and 1-(7-oxabicyclo[2.2.1]hept-5-en-2-yl)cyclopentyl acetate (9CI) (CA INDEX NAME)

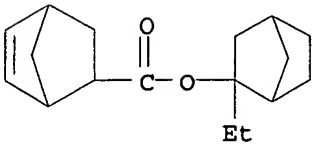
CM 1

CRN 444045-73-2
CMF C13 H18 O3



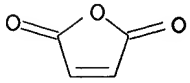
CM 2

CRN 330596-01-5
CMF C17 H24 O2



CM 3

CRN 108-31-6
CMF C4 H2 O3



IC ICM G03F007-038
ICS G03F007-38; G03F007-40; G03F007-30
INCL 430270100
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 35, 38
IT **444045-74-3P** 444045-76-5P 444045-78-7P 444105-77-5P
444105-79-7P 444105-81-1P 444105-83-3P 444105-85-5P
(polymer photoresist composition for patterning process)

L27 ANSWER 24 OF 33 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2002:407174 HCAPLUS
DOCUMENT NUMBER: 136:409030
TITLE: Radiation-sensitive chemically amplified positive resists and lithography using the same
INVENTOR(S): Nio, Hiroyuki; Tamura, Kazutaka; Senoo, Masahide
PATENT ASSIGNEE(S): Toray Industries, Inc., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 10 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002156760	A2	20020531	JP 2000-352488	2000 1120

PRIORITY APPLN. INFO.: JP 2000-352488 2000 1120

AB The resists, showing good sensitivity and high pattern resolution,

contain (a) compds. or acrylate polymers (Markush given) having carboxyls which are protected with ≥3-aromatic-ring-bearing acid-leaving protective groups and (b) radiation-sensitive acid generators.

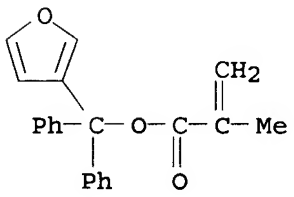
IT **431943-52-1**
(chemical amplified pos. resists containing polymers bearing acid-leaving bulky protective groups for electron beam lithog.)

RN 431943-52-1 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 3-furanyldiphenylmethyl ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 431943-51-0
CMF C21 H18 O3



IC ICM G03F007-039
ICS C08K005-00; C08L033-04; H01L021-027

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 38, 76

IT 383908-19-8 383908-20-1 383908-22-3 **431943-52-1**
(chemical amplified pos. resists containing polymers bearing acid-leaving bulky protective groups for electron beam lithog.)

L27 ANSWER 25 OF 33 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2002:392162 HCAPLUS
DOCUMENT NUMBER: 136:409022
TITLE: Positive resist composition
INVENTOR(S): Aoai, Toshiaki; Yasunami, Shoichiro; Mizutani, Kazuyoshi; Kanna, Shinichi
PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan
SOURCE: U.S. Pat. Appl. Publ., 56 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2002061464	A1	20020523	US 2001-961281	2001 0925
US 6852467	B2	20050208		
JP 2002333715	A2	20021122	JP 2001-202298	2001 0703
TW 528931	B	20030421	TW 2001-90123599	

			2001 0925
PRIORITY APPLN. INFO.:	JP 2000-292537	A	2000 0926
	JP 2000-379284	A	2000 1213
	JP 2001-62158	A	2001 0306
	JP 2001-202298	A	2001 0703

AB The present invention relates to a pos. resist composition comprising: (A) a fluorine group-containing resin having at least one fluorine atom on at least one of the main chain and the side chain of the polymer skeleton; and having a group capable of decomposing under the action of an acid to increase the solubility in an alkali developer; (B) a compound capable of generating an acid upon irradiation with one of actinic ray and radiation; and (C) a surfactant containing at least one of a silicon atom and a fluorine atom. The present invention provides a pos. photoresist composition suitable for use in the microlithog. process in the production of VLSI or high-capacity microchip, or in other photo-fabrication processes. The invention pos. photoresist composition is capable of forming a highly definite pattern using a vacuum UV ray of < 160 nm.

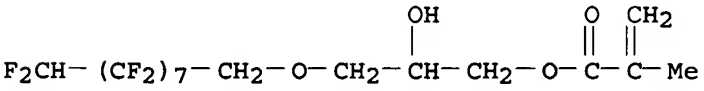
IT **431062-22-5P**
(fluorine group-containing resin for pos. resist composition)

RN 431062-22-5 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 3-[(2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9-hexadecafluorononyl)oxy]-2-hydroxypropyl ester, polymer with 1-methyl-1-(tetrahydro-5-oxo-3-furanyl)ethyl 2-methyl-2-propenoate, 2-methyltricyclo[3.3.1.13,7]dec-2-yl 2-methyl-2-propenoate and 5(or 6)-[3,3,3-trifluoro-2-[(tetrahydro-2H-pyran-2-yl)oxy]-2-(trifluoromethyl)propyl]bicyclo[2.2.1]hept-2-yl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

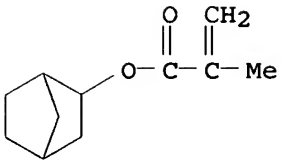
CM 1

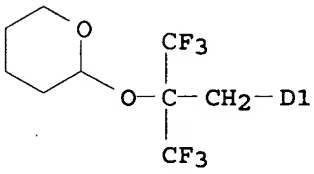
CRN 431062-21-4
CMF C16 H14 F16 O4



CM 2

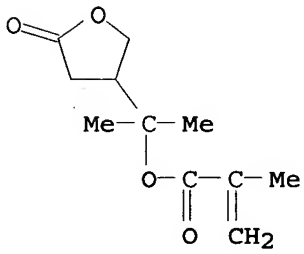
CRN 431062-13-4
CMF C20 H26 F6 O4
CCI IDS





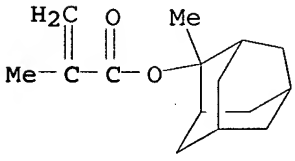
CM 3

CRN 280566-59-8
CMF C11 H16 O4



CM 4

CRN 177080-67-0
CMF C15 H22 O2



IC ICM G03F007-004
INCL 430270100
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 35, 38, 76
IT 262617-13-0P 430436-66-1P 430436-67-2P 430436-68-3P
430436-70-7P 430436-72-9P 430436-74-1P 430436-76-3P
430436-78-5P 430436-79-6P 430436-81-0P 430436-82-1P
430436-84-3P 430436-85-4P 430436-86-5P 430436-87-6P

430436-89-8P 430436-90-1P 430436-91-2P 430436-92-3P
430436-94-5P 430436-95-6P 430436-97-8P 430436-98-9P
430436-99-0P 430437-01-7P 430437-03-9P 430437-04-0P
430437-05-1P 430437-07-3P 430437-09-5P 430437-11-9P
430437-12-0P 430437-13-1P 430437-14-2P 430437-15-3P
430437-17-5P 430437-18-6P 430437-19-7P 430437-21-1P
430437-22-2P 430437-24-4P 430437-26-6P 430437-27-7P
430437-29-9P 430437-30-2P 430437-32-4P 430437-33-5P
430437-34-6P 430437-35-7P 430437-36-8P 430437-37-9P
430437-38-0P 430437-39-1P 430437-40-4P 430437-42-6P
430437-44-8P 430437-46-0P 431062-12-3P 431062-14-5P
431062-16-7P 431062-17-8P 431062-18-9P 431062-20-3P
431062-22-5P 431062-24-7P 431062-25-8P
(fluorine group-containing resin for pos. resist composition)

REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L27 ANSWER 26 OF 33 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2001:935894 HCAPLUS
DOCUMENT NUMBER: 136:77253
TITLE: Positive type radiation-sensitive composition and process for producing pattern with the same
INVENTOR(S): Niwa, Hiroyuki; Tamura, Kazutaka; Senoo, Masahide
PATENT ASSIGNEE(S): Toray Industries, Inc., Japan
SOURCE: PCT Int. Appl., 57 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001098833	A1	20011227	WO 2001-JP315	20010119
W: KR, SG, US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
JP 2002006497	A2	20020109	JP 2000-192298	20000627
EP 1229390	A1	20020807	EP 2001-901436	20010119
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR				
JP 2002082439	A2	20020322	JP 2001-176871	20010612
US 2003003392	A1	20030102	US 2002-69136	20020222
US 6919157	B2	20050719		
PRIORITY APPLN. INFO.:			JP 2000-187335 A	2000

0622

JP 2000-192298 A
2000
0627

WO 2001-JP315 W
2001
0119

AB The invention relates to a pos. type radiation-sensitive composition comprising (A) a compound in which an alkali-soluble group comprising a carboxyl group or phenolic hydroxyl group has been protected by an acid-eliminable group (a) which is any of the following (a1) to (a3), and (B) an acid generator which generates an acid upon irradiation with a radiation; and a method of forming a resist pattern using the composition (a1) The acid-eliminable group (a) is -CR3, provided that at least two of the R's are aromatic rings. (The alkali-soluble group is a carboxyl group.). (a2) The acid-eliminable group (a) is -CR3, provided that at least one of the R's is an aromatic ring having an electron-donating group. (a3) The acid-eliminable group (a) has an alkali-soluble group (a') or has an alkali-soluble group (a") protected by an acid-eliminable group.

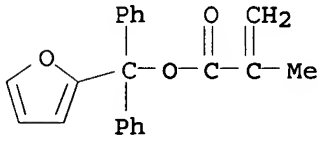
IT **383908-16-5**
(pos. type radiation-sensitive composition and process for producing pattern with the same)

RN 383908-16-5 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 2-furanyldiphenylmethyl ester, polymer with 4-(1-methylethenyl)phenol (9CI) (CA INDEX NAME)

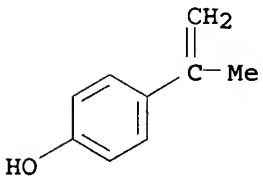
CM 1

CRN 383908-15-4
CMF C21 H18 O3



CM 2

CRN 4286-23-1
CMF C9 H10 O



IC ICM G03F007-039
ICS C08F020-12; C08F020-26; C08F012-24; H01L021-027

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 38, 76

IT 383908-05-2 383908-11-0 383908-14-3 **383908-16-5**
383908-19-8 383908-20-1 383908-22-3 383908-23-4
383908-25-6 383908-27-8 383908-29-0 383908-31-4
383908-33-6 383908-35-8 383908-37-0 383908-39-2
383908-41-6 383908-43-8 383908-45-0 383908-48-3
383908-50-7 383908-52-9 383908-54-1 383908-56-3
383908-57-4 383908-59-6 383908-61-0 383908-83-6
383908-84-7
(pos. type radiation-sensitive composition and process for producing pattern with the same)

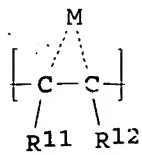
REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L27 ANSWER 27 OF 33 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2001:635653 HCAPLUS
DOCUMENT NUMBER: 135:218724
TITLE: Positive-working photoresist composition containing allylsilane-based resin
INVENTOR(S): Sato, Kenichiro
PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 63 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001235865	A2	20010831	JP 2000-46129	2000 0223
TW 513621	B	20021211	TW 2001-90102179	2001 0202
US 2001041303	A1	20011115	US 2001-789823	2001 0222
US 6528229	B2	20030304		

PRIORITY APPLN. INFO.: JP 2000-46129 A 2000 0223

GI



I

AB The photoresist composition comprises (A) a resin having repeating unit CH2CH(CH2)nSiR1R2R3 (R1-R3 = alkyl, haloalkyl, halo, alkoxy, trialkylsilyl, or trialkylsilyloxy; n = 0 or 1) and I (M = bond for linking 2 C atoms and forming an alicyclic structure which may have a substituent; R11 and R12 = H, cyano, halo, or (substituted) alkyl) and (B) a compound for generating an acid by irradiation of actinic ray or radiation. The composition provides resist pattern having minimized line width variation by SEM observation in semiconductor device fabrication.

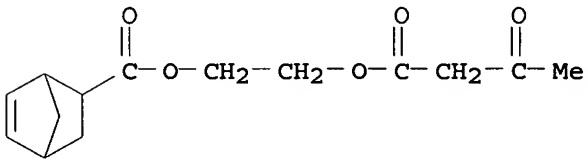
IT **357400-47-6**
(pos.-working photoresist composition containing allylsilane-based acid-decomposable resin)

RN 357400-47-6 HCAPLUS

CN Bicyclo[2.2.1]hept-5-ene-2-carboxylic acid, 2-(1,3-dioxobutoxy)ethyl ester, polymer with 2,5-furandione, 1,1,1,3,3,3-hexamethyl-2-(2-propenyl)-2-(trimethylsilyl)trisilane and 1-methyl-1-(tetrahydro-5-oxo-3-furanyl)ethyl bicyclo[2.2.1]hept-5-ene-2-carboxylate (9CI) (CA INDEX NAME)

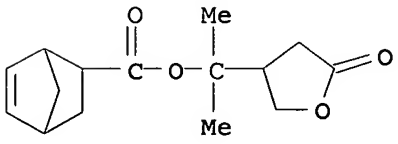
CM 1

CRN 357400-46-5
CMF C14 H18 O5



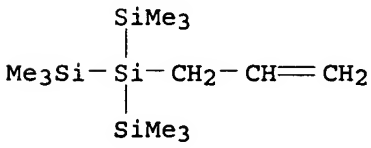
CM 2

CRN 357400-45-4
CMF C15 H20 O4



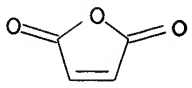
CM 3

CRN 136649-77-9
CMF C12 H32 Si4



CM 4

CRN 108-31-6
CMF C4 H2 O3



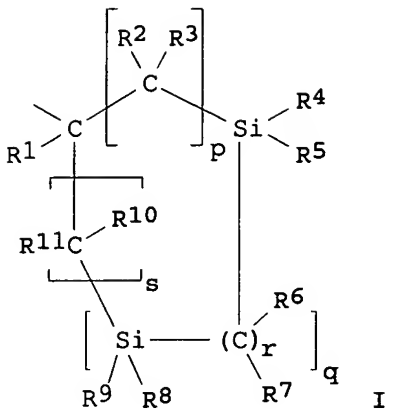
IC ICM G03F007-039
ICS C08F222-00; C08F222-06; C08F230-08; C08F232-08; C08K005-00; C08L035-00; C08L035-02; C08L043-04; C08L045-00; H01L021-027
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 76
IT 357400-36-3 357400-38-5 357400-39-6 357400-40-9
357400-41-0 357400-42-1 357400-44-3 **357400-47-6**
(pos.-working photoresist composition containing allylsilane-based acid-decomposable resin)

L27 ANSWER 28 OF 33 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2001:421123 HCAPLUS
DOCUMENT NUMBER: 135:38890
TITLE: Polymer having silacycloalkane group, photoresist material using the polymer, and patterning of the photoresist
INVENTOR(S): Hatakeyama, Jun; Kaneo, Takeshi; Nakajima, Atsuo; Hasegawa, Koji
PATENT ASSIGNEE(S): Shin-Etsu Chemical Industry Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 33 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

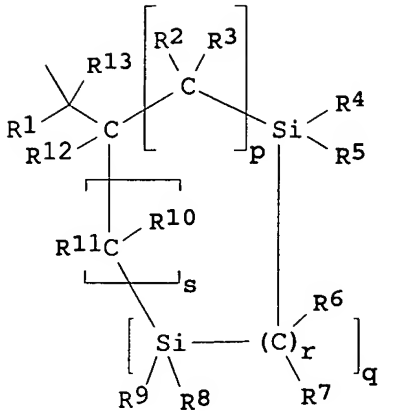
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001158808	A2	20010612	JP 1999-342380	1999 1201
US 2001003772	A1	20010614	US 2000-726592	2000 1201
US 6492089	B2	20021210		
TW 554246	B	20030921	TW 2000-89125640	2000 1201

PRIORITY APPLN. INFO.: JP 1999-342380 A 1999 1201

GI



I



II

AB The polymer involves the cyclic Si-containing group I or II (R1-R3, R6, R7, R10-R13 = H, C1-20 linear, branched, or cyclic alkyl; R4, R5, R8, R9 = H, C1-20 linear, branched, or cyclic alkyl, fluorinated C1-20 alkyl, C6-20 aryl; p, q, r, s = 0-10; 1≤ p + q + s ≤20). The chemical-amplified pos.-working photoresist contains the polymer, an acid-generating agent, and organic solvent optionally associated with a dissoln. inhibitor substituted with acid-unstable group. The photoresist material is applied on a substrate, baked, irradiated with radiation through a photomask, optionally baked, developed by an aqueous alkali, and subjected to O plasma etching to form a precise pattern with perpendicular profile, which is suitable for ultralarge scale integrated circuit, etc.

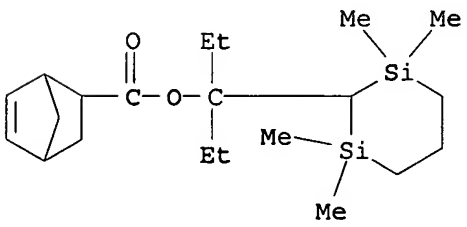
IT **344328-37-6P**
(chemical amplified pos.-working photoresist containing polymer substituted with cyclic silicon-containing group)

RN 344328-37-6 HCAPLUS

CN Bicyclo[2.2.1]hept-5-ene-2-carboxylic acid, 1-ethyl-1-(1,1,3,3-tetramethyl-1,3-disilacyclohex-2-yl)propyl ester, polymer with 2,5-furandione (9CI) (CA INDEX NAME)

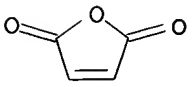
CM 1

CRN 344328-36-5
CMF C21 H38 O2 Si2



CM 2

CRN 108-31-6
CMF C4 H2 O3



IC ICM C08F030-08
ICS G03F007-039; G03F007-075
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 38, 76
IT 344327-81-7P 344327-83-9P 344327-85-1P 344327-87-3P
344327-89-5P 344327-91-9P 344327-93-1P 344327-95-3P
344327-97-5P 344327-99-7P 344328-01-4P 344328-03-6P
344328-05-8P 344328-07-0P 344328-09-2P 344328-11-6P
344328-13-8P 344328-15-0P 344328-17-2P 344328-19-4P
344328-21-8P 344328-23-0P 344328-25-2P 344328-27-4P
344328-29-6P 344328-31-0P 344328-33-2P 344328-35-4P
344328-37-6P
(chemical amplified pos.-working photoresist containing polymer substituted with cyclic silicon-containing group)

L27 ANSWER 29 OF 33 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2001:98663 HCAPLUS
DOCUMENT NUMBER: 134:170820
TITLE: Positive-working silicone-containing photosensitive compositions
INVENTOR(S): Yasunami, Shoichiro
PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 19 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001033974	A2	20010209	JP 1999-202179	19990715

PRIORITY APPLN. INFO.: JP 1999-202179 19990715

GI

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

AB The compns. contain (a) alkaline-soluble and water-insol. polymer comprising of I and/or II (X = COR, CH(OH)R, carboxyl; R = H, (un)substituted hydrocarbon; R1-5 = OH, (un)substituted

(cyclo)alkyl, alkoxy, alkenyl, aralkyl, Ph; Y = alkyl, alkoxy, siloxyl, R0 = H, halogen, (un)substituted aliphatic or aromatic hydrocarbon; l, m, n, q = 0, pos. number; p = pos. number), (b) compds. generating acid on irradiation of active ray or radiant ray, (c) polymers containing acid-decomposable groups and showing increase of solubility to alkaline developer on reaction with acid, and (d) Si-containing nonpolymeric compound containing acid-decomposable groups and showing increase of solubility to alkaline developer on reaction with acid. Far UV photoresists with high sensitivity and resolution are obtained.

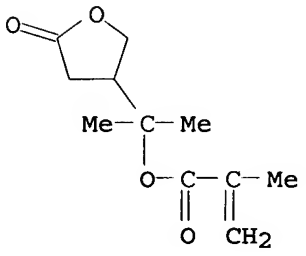
IT **280566-60-1**
(pos.-working silicon-containing photoresists for micropattern formation in semiconductor device fabrication)

RN 280566-60-1 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1-methyl-1-(tetrahydro-5-oxo-3-furanyl)ethyl ester, polymer with 2-methyltricyclo[3.3.1.13,7]dec-2-yl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

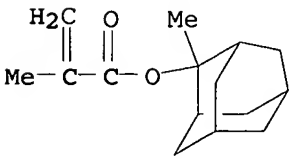
CM 1

CRN 280566-59-8
CMF C11 H16 O4



CM 2

CRN 177080-67-0
CMF C15 H22 O2



IC ICM G03F007-075
ICS C08L083-06; G03F007-039; G03F007-36

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 38

IT 51350-55-1D, Phenylsilsesquioxane, acetylated 157374-41-9D, Phenylsilsesquioxane, acetylated 177080-68-1 196709-91-8, 4-Hydroxystyrene-4(1-tert-butoxyethoxy)styrene copolymer
199432-82-1 216308-45-1 279244-37-0 **280566-60-1**
288620-13-3 289706-85-0 325143-37-1 325143-38-2
325143-39-3 325143-40-6 325143-41-7

(pos.-working silicon-containing photoresists for micropattern formation in semiconductor device fabrication)

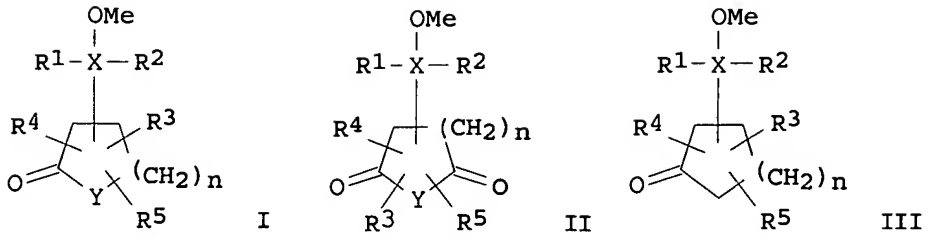
L27 ANSWER 30 OF 33 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2000:686614 HCAPLUS
DOCUMENT NUMBER: 133:274251
TITLE: Positively-working photoresist composition for far-ultraviolet ray photolithography
INVENTOR(S): Kodama, Kunihiko; Sato, Kenichiro; Aogo, Toshiaki
PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 62 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2000267287	A2	20000929	JP 1999-186809	19990630
KR 2000011988	A	20000225	KR 1999-30510	19990727
US 6291130	B1	20010918	US 1999-361568	19990727
US 6517991	B1	20030211	US 2000-606681	20000630
US 2003044718	A1	20030306	US 2002-176067	20020621
US 2004161697	A2	20040819		
US 6818377	B2	20041116		

PRIORITY APPLN. INFO.:		
JP 1998-263392	A	19980917
JP 1999-6662	A	19990113
JP 1998-211137	A	19980727
JP 1999-186809	A	19990630
US 1999-361568	A3	19990727
US 2000-606681	A3	2000

0630

GI



AB The composition contains a compound discharging acids under active ray or radiation irradiation and a polymer whose solubility in alkaline developer is enhanced because of decomposition of the polymer by the resulting acids. The polymer involves carboxyl-protecting alc. units I, II, and/or III [R1, R2 = H, (substituted) linear, branched, or cyclic alkyl; R1 and R2 may form single or polycyclic group which may contain O, S, N, ketone, ester, imide, or amide group; R3-R5 = H, (substituted) linear, branched, cyclic alkyl, alkoxy; 2 of R3-R5 may form single or polycyclic group as above; X = single bond, divalent group; X and R1 and/or R2 may form single or polycyclic group; Y = O, S, NH, N(OH), NR; R = alkyl; n = 1-3]. The far-UV-sensitive photoresist composition is suitable for semiconductor device fabrication, etc.

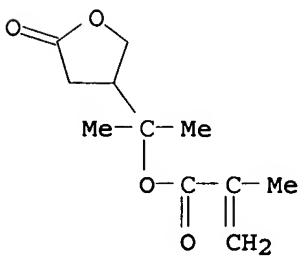
IT **280566-60-1P 297156-25-3P 297156-27-5P**
297156-28-6P 297156-30-0P 297156-33-3P
297156-35-5P 297156-39-9P
(far UV-sensitive photoresist composition containing protected carboxy-substituted polymer)

RN 280566-60-1 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1-methyl-1-(tetrahydro-5-oxo-3-furanyl)ethyl ester, polymer with 2-methyltricyclo[3.3.1.13,7]dec-2-yl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

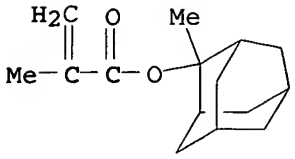
CM 1

CRN 280566-59-8
CMF C11 H16 O4



CM 2

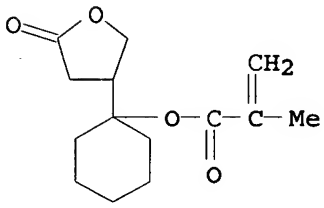
CRN 177080-67-0
CMF C15 H22 O2



RN 297156-25-3 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, polymer with 1-(tetrahydro-5-oxo-3-furanyl)cyclohexyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

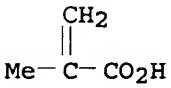
CM 1

CRN 297156-24-2
CMF C14 H20 O4



CM 2

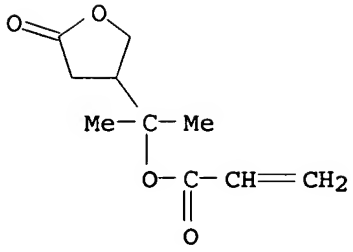
CRN 79-41-4
CMF C4 H6 O2



RN 297156-27-5 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 2-butyltricyclo[3.3.1.13,7]dec-2-yl ester, polymer with 1-methyl-1-(tetrahydro-5-oxo-3-furanyl)ethyl 2-propenoate (9CI) (CA INDEX NAME)

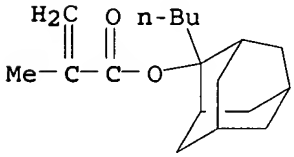
CM 1

CRN 297156-26-4
CMF C10 H14 O4



CM 2

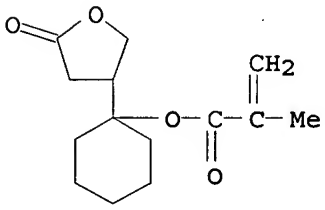
CRN 209982-54-7
CMF C18 H28 O2



RN 297156-28-6 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 1-(tetrahydro-5-oxo-3-furanyl)cyclohexyl ester, polymer with (3R,3aS,6R,7R,8aS)-octahydro-3,6,8,8-tetramethyl-1H-3a,7-methanoazulen-6-yl 2-propenoate (9CI) (CA INDEX NAME)

CM 1

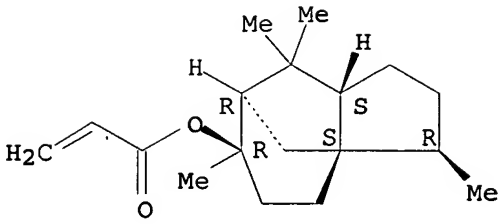
CRN 297156-24-2
CMF C14 H20 O4



CM 2

CRN 132603-00-0
CMF C18 H28 O2

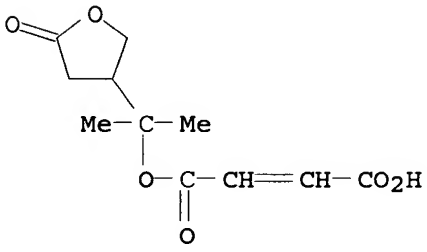
Absolute stereochemistry.



RN 297156-30-0 HCAPLUS
CN 2-Butenedioic acid, mono[1-methyl-1-(tetrahydro-5-oxo-3-furanyl)ethyl] ester, polymer with 1,7,7-trimethylbicyclo[2.2.1]hept-2-yl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

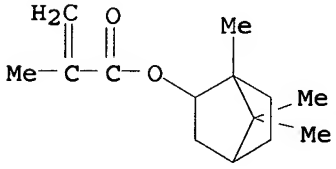
CM 1

CRN 297156-29-7
CMF C11 H14 O6



CM 2

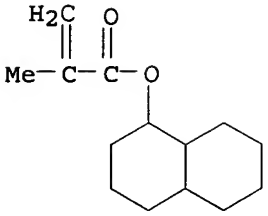
CRN 16868-12-5
CMF C14 H22 O2



RN 297156-33-3 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, decahydro-1-naphthalenyl ester, polymer with 1-methyl-1-(tetrahydro-2,5-dioxo-3-furanyl)ethyl 2-propenoate (9CI) (CA INDEX NAME)

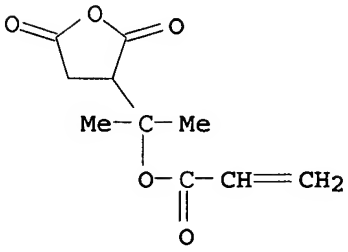
CM 1

CRN 297156-32-2
CMF C14 H22 O2



CM 2

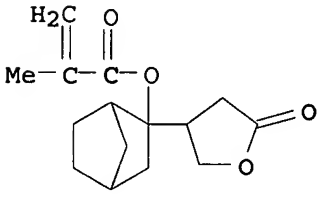
CRN 297156-31-1
CMF C10 H12 O5



RN 297156-35-5 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 1,1-dimethylethyl ester, polymer with 2-(tetrahydro-5-oxo-3-furanyl)bicyclo[2.2.1]hept-2-yl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

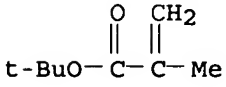
CM 1

CRN 297156-34-4
CMF C15 H20 O4



CM 2

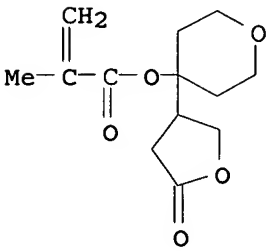
CRN 585-07-9
CMF C8 H14 O2



RN 297156-39-9 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, polymer with 1,1-dimethylethyl 2-methyl-2-propenoate and tetrahydro-4-(tetrahydro-5-oxo-3-furanyl)-2H-pyran-4-yl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

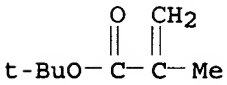
CM 1

CRN 297156-38-8
CMF C13 H18 O5



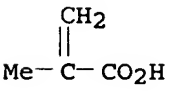
CM 2

CRN 585-07-9
CMF C8 H14 O2



CM 3

CRN 79-41-4
CMF C4 H6 O2



IC ICM G03F007-039
ICS H01L021-027; C08F020-26
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 76
IT **280566-60-1P** 288303-55-9P **297156-25-3P**
297156-27-5P **297156-28-6P** **297156-30-0P**
297156-33-3P **297156-35-5P** 297156-37-7P
297156-39-9P 297156-40-2P 297156-42-4P 297156-44-6P
297156-46-8P 297156-48-0P 297156-51-5P 297156-52-6P
297156-53-7P 297156-55-9P 297156-57-1P 297156-58-2P
297156-59-3P
(far UV-sensitive photoresist composition containing protected

carboxy-substituted polymer)

L27 ANSWER 31 OF 33 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2000:474297 HCAPLUS
DOCUMENT NUMBER: 133:96798
TITLE: Pattern formation using positive-working photoresist
INVENTOR(S): Sato, Kenichiro; Nakao, Hajime; Kawabe, Yasumasa
PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 32 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2000194135	A2	20000714	JP 1998-371210	1998 1225

PRIORITY APPLN. INFO.: JP 1998-371210 1998 1225

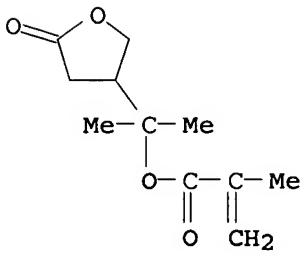
GI

AB The title process comprises the steps of (i) coating, on a substrate, a pos.-working photoresist composition for far UV ray exposure, containing (a) a compound which generates an acid by irradiation with activating ray or radiation and (b) a resin which contains alkali-soluble groups protected with ≥1 of the groups having alicyclic hydrocarbon structures I, CR12R13R14, CH(OR15)R16, CR19R21CR17:CR18R20, CR22R25CHR23COR24, and II (R11 = Me, Et, Pr, iso-Pr, Bu, iso-Bu, sec-Bu; Z = atoms required to form an alicyclic hydrocarbon group along with the C atom; R12-16 = C1-4 straight-chain or branched alkyl or alicyclic hydrocarbon, ≥1 of R12-14 and either R15 or R16 are alicyclic hydrocarbons; R17-21 = H, C1-4 straight-chain or branched alkyl or alicyclic hydrocarbon, ≥1 of R17-21 is an alicyclic hydrocarbon, either R19 or R21 is a C1-4 straight-chain or branched alkyl or alicyclic hydrocarbon; R22-25 = C1-4 straight-chain or branched alkyl or alicyclic hydrocarbon, ≥1 of R22-25 is an alicyclic hydrocarbon) and is cleaved by the action of acid to increase the solubility to alkali, (ii) patternwise exposing the coating to activating ray or radiation, and (iii) developing the exposed coating with an aqueous organic alkali solution in the presence of a surfactant. High resolution resist patterns showing improved coarse-dense dependence are formed by using far UV rays, especially, ArF excimer laser beams.

IT **280566-60-1P**
(photoresist composition containing acid generator and polymer with alicyclic protective group)
RN 280566-60-1 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 1-methyl-1-(tetrahydro-5-oxo-3-furanyl)ethyl ester, polymer with 2-methyltricyclo[3.3.1.13,7]dec-2-yl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

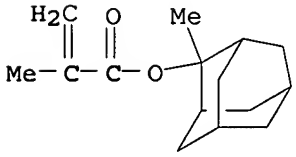
CM 1

CRN 280566-59-8
CMF C11 H16 O4



CM 2

CRN 177080-67-0
CMF C15 H22 O2



IC ICM G03F007-039
ICS G03F007-32; H01L021-027
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 38
IT 177080-68-1P 181531-13-5P 195000-67-0P 195000-69-2P 258341-99-0P 280566-51-0P 280566-53-2P 280566-55-4P 280566-56-5P **280566-60-1P**
(photoresist composition containing acid generator and polymer with alicyclic protective group)

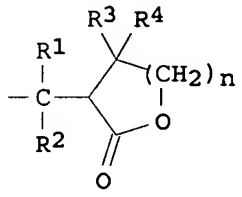
L27 ANSWER 32 OF 33 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1999:519010 HCAPLUS
DOCUMENT NUMBER: 131:191866
TITLE: Radiation-sensitive resin composition for chemically amplified photoresist
INVENTOR(S): Suwa, Mitsufumi; Iwasawa, Haruo; Yamamoto, Masafumi; Kajita, Toru
PATENT ASSIGNEE(S): JSR Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 23 pp.

CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 11223950	A2	19990817	JP 1998-37944	1998 0205

PRIORITY APPLN. INFO.: JP 1998-37944 1998 0205

GI

Q= 

AB The composition comprises (A) an alkali insol. or slightly alkali soluble resin having a lactone ring-containing group Q (R1-4 = H, C1-6 linear or branched alkyl, 5- to 8-membered cyclic alkyl; R1 and R2 or R3 and R4 may form 5- to 8-membered cyclic alkyl; n = 1-4) which releases by acids, and when the group itself and/or the lactone ring releases, the resin becomes alkali soluble and (B) a radiation-sensitive acid generator. The composition has high transparency and resolution to radiation, and is especially useful for manufacturing semiconductor devices.

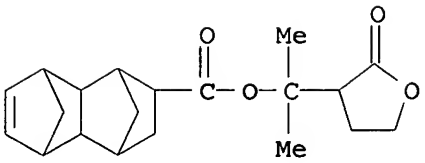
IT **239784-46-4P 239784-47-5P 239784-48-6P 239784-81-7P**
(radiation-sensitive composition containing resin having acid-releasable group with lactone ring for chemical amplified photoresist)

RN 239784-46-4 HCAPLUS

CN 1,4:5,8-Dimethanonaphthalene-2-carboxylic acid, 1,2,3,4,4a,5,8,8a-octahydro-, 1-methyl-1-(tetrahydro-2-oxo-3-furanyl)ethyl ester, polymer with 2,5-furandione (9CI) (CA INDEX NAME)

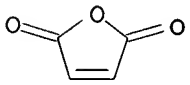
CM 1

CRN 239784-42-0
CMF C20 H26 O4



CM 2

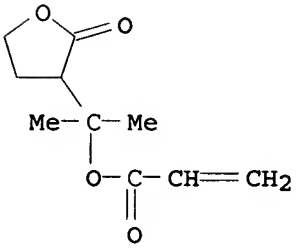
CRN 108-31-6
CMF C4 H2 O3



RN 239784-47-5 HCAPLUS
CN 2-Propenoic acid, 1-methyl-1-(tetrahydro-2-oxo-3-furanyl)ethyl ester, polymer with tricyclo[3.3.1.13,7]dec-1-yl 2-propenoate (9CI) (CA INDEX NAME)

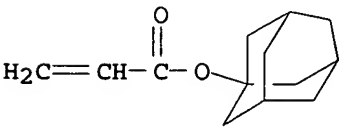
CM 1

CRN 239784-43-1
CMF C10 H14 O4



CM 2

CRN 121601-93-2
CMF C13 H18 O2

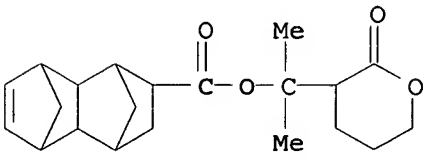


RN 239784-48-6 HCAPLUS
CN 1,4:5,8-Dimethanonaphthalene-2-carboxylic acid, 1,2,3,4,4a,5,8,8a-octahydro-, 1-methyl-1-(tetrahydro-2-oxo-2H-

pyran-3-yl)ethyl ester, polymer with 2,5-furandione (9CI) (CA INDEX NAME)

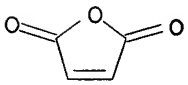
CM 1

CRN 239784-44-2
CMF C21 H28 O4



CM 2

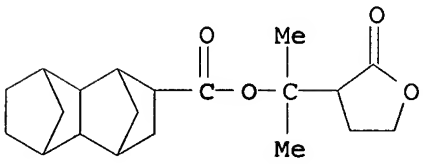
CRN 108-31-6
CMF C4 H2 O3

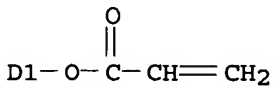


RN 239784-81-7 HCAPLUS
CN 1,4:5,8-Dimethanonaphthalene-2-carboxylic acid, decahydro-6(or 7)-[(1-oxo-2-propenyl)oxy]-, 1-methyl-1-(tetrahydro-2-oxo-3-furanyl)ethyl ester, polymer with tricyclo[3.3.1.13,7]dec-1-yl 2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 239784-79-3
CMF C23 H30 O6
CCI IDS

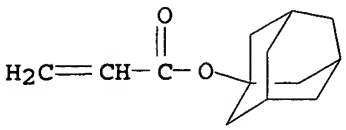




CM 2

CRN 121601-93-2

CMF C13 H18 O2



IC ICM G03F007-039
ICS H01L021-027
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 38
IT **239784-46-4P 239784-47-5P 239784-48-6P**
239784-49-7P **239784-81-7P** 239784-82-8P
(radiation-sensitive composition containing resin having acid-releasable group with lactone ring for chemical amplified photoresist)

L27 ANSWER 33 OF 33 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1999:56806 HCAPLUS
DOCUMENT NUMBER: 130:160673
TITLE: Positive-working photoresist with high transparency to ArF excimer laser and high resolution
INVENTOR(S): Haneda, Hideo; Sato, Kazushi; Komano, Hiroshi
PATENT ASSIGNEE(S): Tokyo Ohka Kogyo Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 11 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 11015162	A2	19990122	JP 1997-171947	19970627
US 6087063	A	20000711	US 1998-102622	19980623
US 6225476	B1	20010501	US 2000-542952	20000404
JP 2004231971	A2	20040819	JP 2004-100511	20040330

PRIORITY APPLN. INFO.:	JP 1997-171947	A	19970627
	US 1998-102622	A3	19980623

AB The photoresist comprises (A) an acrylic resin [CH2CHR1(CO2CR2R3R4)] (R1 = H, Me; R2-3 = lower alkyl; R4 =

residue of a lactone, a ketone, or an ester) whose alkali solubility is changed by acids and (B) an acid generator releasing acids by radiation. The photoresist shows good affinity to alkalis and is suited for paddle development.

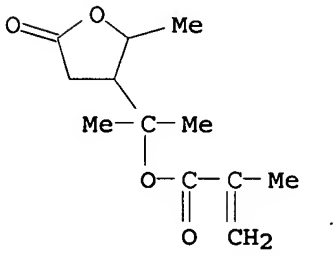
IT **220196-44-1P 220196-45-2P 220196-52-1P**
(pos. photoresist containing lactone-, ketone-, or ester-branched acrylic resin and showing good transparency to excimer laser)

RN 220196-44-1 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1-methyl-1-(tetrahydro-2-methyl-5-oxo-3-furanyl)ethyl ester, polymer with tetrahydro-4,4-dimethyl-2-oxo-3-furanyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

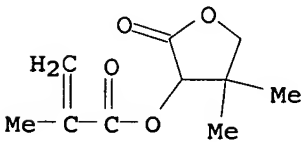
CM 1

CRN 220196-43-0
CMF C12 H18 O4



CM 2

CRN 156938-13-5
CMF C10 H14 O4

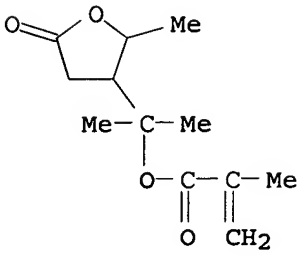


RN 220196-45-2 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1-methyl-1-(tetrahydro-2-methyl-5-oxo-3-furanyl)ethyl ester, polymer with 2-methyltricyclo[3.3.1.13,7]dec-2-yl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

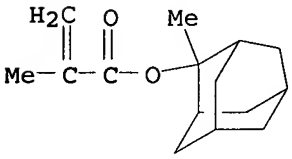
CM 1

CRN 220196-43-0
CMF C12 H18 O4



CM 2

CRN 177080-67-0
CMF C15 H22 O2

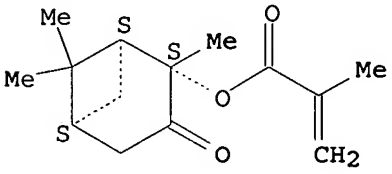


RN 220196-52-1 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 1-methyl-1-(tetrahydro-2-methyl-5-oxo-3-furanyl)ethyl ester, polymer with rel-(1R,2R,5R)-2,6,6-trimethyl-3-oxobicyclo[3.1.1]hept-2-yl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

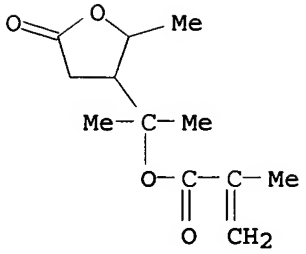
CRN 220196-50-9
CMF C14 H20 O3

Relative stereochemistry.



CM 2

CRN 220196-43-0
CMF C12 H18 O4



IC ICM G03F007-039
ICS G03F007-004; G03F007-033; H01L021-027

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 38

IT 220196-41-8P 220196-42-9P **220196-44-1P**
220196-45-2P 220196-48-5P 220196-49-6P 220196-51-0P
220196-52-1P
(pos. photoresist containing lactone-, ketone-, or ester-branched acrylic resin and showing good transparency to excimer laser)